

1995

COMMUNICATION SOURCE-BOOK™

EDITION 1

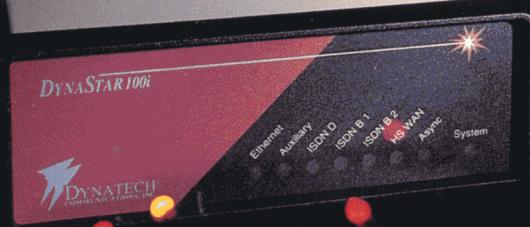
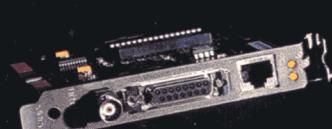
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Dear Valued Customer,

Welcome to the first edition of the New Communications Source-Book from Industrial Computer Source, the industry's fastest growing manufacturer and direct marketer of quality IBM PC-compatible computer and communications networking hardware, software, I/O and accessories. For the **fifth** year running, the readers of Personal Engineering and Instrumentation News (January 1995 issue), named us **number one** in the market, over all other suppliers of ruggedized PC-based solutions. And to satisfy our customers' growing need for a single-source solution, we've introduced this Source-Book to include even more products.

In this Source-Book you will find everything you need to form a complete network connectivity solution - Ethernet and token ring products, multimedia concentrators, bridges and routers, printservers, multitasking operating systems, UPS, board-level communications products, chassis, CPUs and much more. After reviewing its contents, we're confident that you will soon join the tens of thousands of other satisfied customers who have made us the most respected and requested name in the industry, because of our:

- Depth of Technical Support** - whether you need a single I/O board or a fully configured network concentrator, expert on-line applications engineering support is provided at no extra charge - before, during or after the sale - to ensure successful installation and hassle-free operation.
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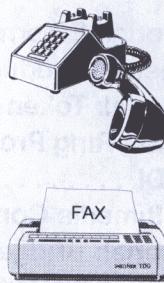
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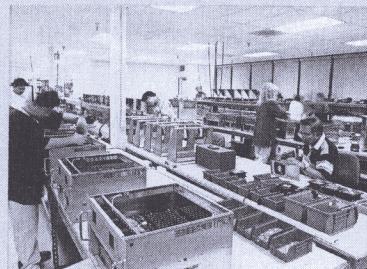
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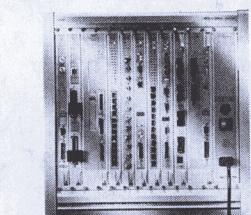
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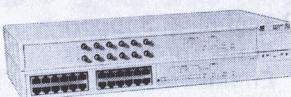
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Preview of Key Products

System 3000™ concentrators feature multiple-bus backplane architecture which enables them to simultaneously support a combination of 10 megabit per second (Mbps) Ethernet, 4 Mbps and 16 Mbps Token Ring, and 100 Mbps Fiber Distribution Data Interface (FDDI) networks. Through a variety Ethernet, Token Ring and FDDI connectivity, internetworking and networking management modules, you can create custom configurations that meet your specific networking needs. (see pages 16-17)



Discover why 3COM's reputation for building reliable and well designed products is richly deserved. The LinkBuilder FMS II Stackable Ethernet Hubs provide flexible, easy-to-configure systems for departmental and remote offices. (see page 7)



The DynaStar® 100 is a multi-tasking, multi-microprocessor platform that provides LAN connectivity over wide area networks (WAN). Its hardware and software modules simultaneously support multiple LAN interfaces, WAN interfaces, and LAN/WAN applications. (see pages 26-27)



Order Now!

A Quick Look at Ethernet

Ethernet was first developed by DEC, Intel and Xerox in 1973. Based on Carrier Sense Multiple Access with Collision Detection (CSMA/CD), Ethernet stations "listen" on the shared network cable prior to transmission. If stations attempt to transmit at the same time, a "collision" is detected—during which time, no station can transmit. Bad network cable or faulty equipment can also contribute to excessive collisions. With its relatively simple and direct medium access control, today's Ethernet is the choice for 70% of all network installations.

While 5 specifications share the CSMA/CD architecture, the media type (i.e., cabling), media connector and perhaps most importantly, transmission speeds can differ.

The most popular choice for Ethernet is 10BaseT:

- The hub-based star configuration is more reliable than the older bus topology
- The network is easy to install, maintain and expand
- Large selection of equipment from multiple vendors

NEW ADVANCES

Although the performance of standard 10BaseT is 10Mbps, vendors and users have applied new technology to improve this transmission rate with:

- 100BaseT (Fast Ethernet) which uses 4 pair Category 3 cable, 2-pair Category 5 cable, or Fiber to deliver 10 times the base transmission rate (100Mbps).
- Full Duplex Ethernet (FDE), to effectively double the base transmission rate when used with full-duplex switching hubs (to 20 or 200Mbps).
- Switches that replace the shared media approach of standard hubs and concentrators, providing each connection with the full transmission rate, both increasing performance and decreasing the number of collisions by providing each node with its own transmission channel.
- Fiber cabling delivers superior performance by removing the impact of EMI and increasing the maximum segment length to 2000 meters.

COMMON ETHERNET EQUIPMENT

A transceiver (transmitter/receiver) is either built into a Ethernet port or must be attached via an Attachment Interface Unit (AUI) connector. An external transceiver is usually only required when connecting an Ethernet port to a media that is not supported by the network card. For example, a card with an AUI and BNC connector cannot be attached to a fiber or UTP Ethernet network unless an AUI-to-Fiber (ST) or AUI-to-RJ45 transceiver is used. (see page 4)

REPEATERS

A repeater simply electronically boosts and amplifies the signal to increase the transmission distance. Depending on your network's configuration, only a certain number of repeaters may be used to a maximum distance.

Tech Tip:

Consult with Industrial Computer Source's Application Engineering Staff on how to configure a trouble-free network.

CONCENTRATORS AND HUBS

The simplest way to build an Ethernet network, concentrators and hubs are common on small 10BaseT networks. The hubs and concentrators serve as the central connection points for an Ethernet network.

INTELLIGENT HUBS/STACKABLES

Intelligent hubs allow a network administrator to effectively monitor and control each individual port on a hub. The limits of the monitoring and control are dependent on the available software and the hubs. Stackables or modular hubs typically offer the management capabilities of intelligent hubs as well as mixed-media support and easy network expansion.

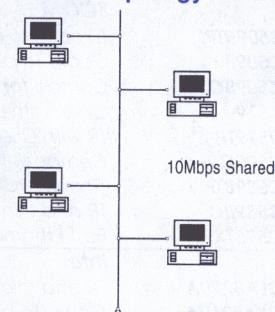
BRIDGES, SWITCHES AND ROUTERS

Ethernet bridges are commonly used to partition network segments to reduce the number of collisions, increase end-to-end distance (beyond that of repeaters), or improve performance. Ethernet switches are essentially high-speed bridges that maintain individual connections for improved performance. (see diagrams)

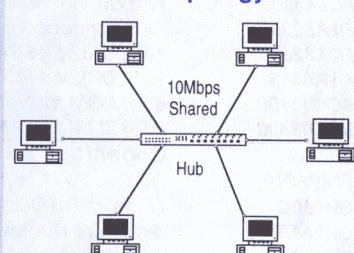
Routers like bridges are also used to segment Ethernet networks. Routers filter and forward network traffic based on information other than the Ethernet destination address (MAC), such as the IP addresses contained in TCP/IP packets.

Ethernet Tutorial

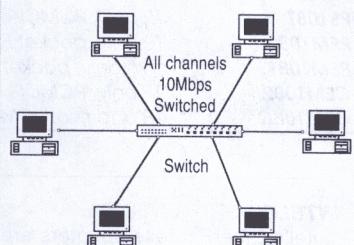
BUS Topology



Star Topology



Switch Based



Five Specifications for Ethernet

	Media Type	Media Connector	Max. Segment Length	Max. # of Nodes per segment
10Base5	Thick coax	AUI (TNC)	500m	100 ^t
10Base2	Thin coax	BNC	185m	30 ^t
10BaseT	UTP	RJ45	100m	1 [‡]
10BaseF	Fiber Optic	ST	2000m	1 [‡]
100BaseT	UTP, STP, Fiber Optic (FOIRL)	RJ45, ST	100/400m*	1 [‡]

^t Bus Topology—where stations are serially attached along a length of cable

[‡] Star Topology—where each station is connected to an individual port on a hub or concentrator

* Copper and Fiber respectively



3COM®, Intel®, Cogent®, XirCom® Ethernet Network Cards

Model	Manufacturer/Description	AUI	BNC	TP	Speed (Mb/sec)	PC Bus	Price
3COM							
3C509BTP	TP only, 16-bit ISA			x	10	ISA	\$ 125.00
3C509B	Coax, 16-bit ISA	x	x		10	ISA	\$ 135.00
3C509BC	Combo for all 3 network types, 16-bit ISA	x	x		10	ISA	\$ 150.00
3C579	Coax with EISA bus	x	x		10	EISA	\$ 275.00
3C579TP	TP with EISA bus			x	10	EISA	\$ 275.00
3C590C	Combo with 32-bit PCI bus	x	x	x	10	PCI	\$ 199.00
3C589BTP	TP only, PCMCIA			x	10	PCMCIA (II)	\$ 189.00
3C589BC	TP and thin coax, PCMCIA		x	x	10	PCMCIA (II)	\$ 245.00
3C595TX	Fast Ethernet on a 32-bit PCI bus, TP			x	10/100	PCI	\$ 285.00
Intel							
PCLA8220A	TP and thick, 16-bit ISA	x		x	10	ISA	\$ 115.00
PCLA8210A	Coax, 16-bit ISA	x	x		10	ISA	\$ 120.00
PCLA8200A	Combo for all 3 network types, 16-bit ISA	x	x	x	10	ISA	\$ 140.00
PCLA8225A	TP only, 16-bit ISA, w/ Flash			x	10	ISA	\$ 125.00
PCLA8220A	TP and thin, 16-bit ISA, w/ Flash		x	x	10	ISA	\$ 115.00
PCLA8205A	All 3 connections, 16-bit ISA, w/ Flash	x	x	x	10	ISA	\$ 150.00
EILA8225	All 3 connections, 32-bit EISA, w/ Flash	x	x	x	10	EISA	\$ 269.00
EILA8265	10/100, 32-bit EISA bus			x	10/100	EISA	\$ 299.00
PILA8465	10/100, 32-bit PCI bus			x	10/100	PCI	\$ 259.00
BOOT8100	Boot ROM for NetWare						\$ 39.00
BOOT8400	Boot ROM for LAN Manager						\$ 39.00
Cogent							
EM960TP	Full Duplex, 32-bit PCI			x	10/20	PCI	\$ 169.00
EM960C	Combo, Full Duplex, 32-bit PCI	x	x	x	10/20	PCI	\$ 199.00
EM964TP	4-port Full Duplex, 32-bit PCI, TP			x	10/20 (x4)	PCI	\$ 630.00
EM100	Full Fast Ethernet, 32-bit PCI			x	100/200	PCI	\$ 249.00
EM400	4-port Fast Ethernet, 32-bit PCI			x	100/200 (x4)	PCI	\$ 1395.00
Xircom							
PE310BT	TP only, pocket laptop adapter			x	10	Parallel port	\$ 349.00
PE310B2	Thin only, pocket laptop adapter	x			10	Parallel port	\$ 349.00
PE310BX	Thick only, pocket laptop adapter	x			10	Parallel port	\$ 399.00
PS10BC	TP and thin, PCMCIA (Type II)	x	x		10	PCMCIA	\$ 259.00
PS10BT	TP only, PCMCIA (Type II)		x		10	PCMCIA	\$ 199.00
PEM10B2	TP only, pocket Ethernet+14.4 modem		x		10	Parallel port	\$ 599.00
PEM10BT	Thin only, pocket Ethernet+14.4 modem	x			10	Parallel port	\$ 599.00
CEM10B2	TP only, PCMCIA Ethernet+14.4 modem		x		10	PCMCIA	\$ 499.00
CEM10BC	TP and thin, PCMCIA Ethernet+modem	x	x		10	PCMCIA	\$ 569.00

INTEL®

"Intel's EtherExpress adapters are reliable, affordable and simple-to-install solutions for every network environment. With the intuitive software configuration, auto-connection detection and the Flash-upgradable option, nothing is simpler."

"Intel's EtherExpress PRO/10 are premium adapters that include features like on-board cache memory for improved performance. The Flash memory lets you remotely update drivers, inventory PC configurations and maintain powerful anti-virus protection."

"Intel's EtherExpress 10/100 adapters are fully compatible with current 10BaseT networks and the new, faster 100Base-TX technology. During installation, the card will auto-sense the correct speed for trouble-free operation. Nothing is easier."

3COM®

"3COM's Etherlink III unique patented Parallel Tasking speeds data transfers by simultaneously performing multiple tasks. 3COM's unique, proven technology includes an ASIC design and auto driver-tuning — which promotes high performance and reliability."

"Since 3COM's Fast Etherlink 10/100 adapters can operate at either 10Mbps and 100 Mbps, these adapters are perfect for gradually upgrading your existing Ethernet network to 100 Mbits or using only the latest technology."

XIRCOM®

"Xircom is synonymous with mobile networking and their new combo modem/Ethernet PCMCIA cards are nothing short of exceptional. Or get the standard Ethernet card — whatever you choose. Xircom is the great choice for laptop connectivity."

COGENT®

"Cogent adapters offer superior features for the power user. The FDE (Full Duplex Ethernet 20Mbps) adapters are perfect for resource-intensive operations such as high-resolution graphics, multimedia and mission-critical applications."

"The 4-port adapters are ideal for server and resource-intensive environments — where performance is crucial, and PC slots are at a shortage."

"Cogent's Fast Ethernet (100Base-TX) adapters not only feature a 32-bit bus mastering design, and Predictive Pipelining for optimum performance but also has full duplex capability (effectively doubling bandwidth for switched networks)!"

Tranceivers & Repeaters

ETHERNET

Model MIL05T



Model MIL02F



Tranceivers

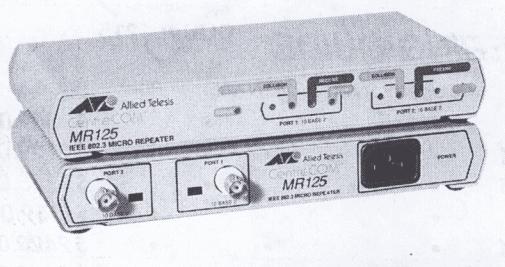
FEATURES

- Converts 15-pin AUI Ethernet Port to Other Media
- Small Size 2.5" x 1.75" x .75" (64 x 45 x 19mm)
- Rugged, Reliable and Portable
- LEDs Indicate Power and SQE
- SQE Jumper Selectable

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Model MIL05T	\$ 49.00	Model MIL01FT	\$ 249.00
AUI to BNC		AUI to FOIRL-ST	
Model MIL10P	\$ 49.00	Model MIL01V	\$ 175.00
AUI to RJ45		AUI w/Vampiretap	
Model MIL01FA	\$ 265.00	Model MIL02F	\$ 299.00
AUI to FOIRL-SMA		Full duplex, 10 Base FL, Ethernet transceiver, manual	

Model MR125



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Ethernet Repeaters

FEATURES

- Dual-Port Configuration
- IEEE 802.3 10BaseT, 10Base2, & 10Base5, FOIRL Compliant
- Status and Diagnostic LEDs
- Automatic Polarity Detection and Correction on UTP Ports
- Automatic Segment Partitioning and Jabber Lock-up Protection
- 100-230 Volt Operation
- FCC, UL, CSA, (TUV-GS pending)
- Desktop, Wall Mount, or Rack Mount (Optional Adapter Kit)

The MR12x Series Micro Repeaters are 2 port media extenders designed for the coax media and Unshielded Twisted Pair (UTP) markets. The MR12x Series allow connections between different media, such as UTP (10BaseT), thin coax (10Base2), and thick coax (10Base5) in any combination. Segments on either side of the unit support full length, fully repeated transmission, and allow the maximum number of nodes specified by IEEE 802.3. The MR12x Series utilize state-of-the-art technologies, including a custom ASIC and Surface Mount Technology, which provide enhanced functionality, increased reliability, and improved performance.

ORDERING GUIDE

Model MR121T	\$ 390.00	Model MR125	\$ 675.00
AUI to RJ45		BNC to BNC	
Model MR122T	\$ 390.00	Model MR126F	\$ 825.00
BNC to RJ45		AUI to FOIRL	
Model MR123	\$ 575.00	Model MR127F	\$ 825.00
AUI to AUI		BNC to FOIRL	
Model MR124	\$ 575.00		
AUI to BNC			



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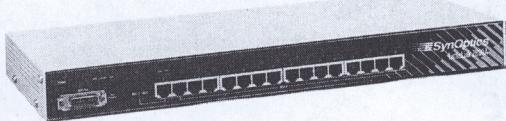
SynOptics Ethernet Hubs and Concentrators

Concentrators and Hubs are the basic building blocks for 10BaseT Networks, and no company is better known for its products than SynOptics. Now merged with Wellfleet to form BayNetworks, users are guaranteed even greater product compatibility and selections than before.

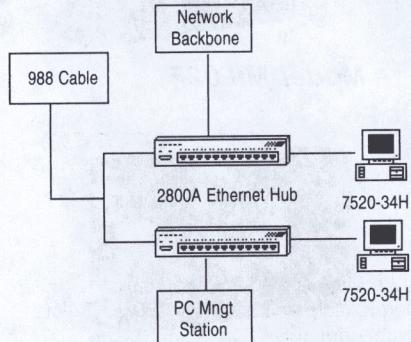
For Department Networks

Model 2800A

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Featuring 16 RJ45 ports and 1 AUI port, the 2800A is affordable and ideal for small Ethernet networks. With plug-n-play operation, a built in power supply and front panel diagnostics LEDs, the 2800A is the simple choice.

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Model 2800A \$ 775.00

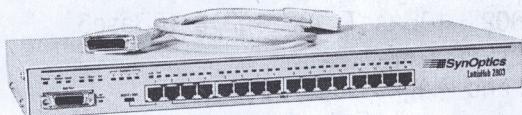
Single rack unit (19") Ethernet Hub,
16-port unmanaged

Model 988 \$ 35.00

Expansion cables to connect hubs

For Entry-Level Networks and Growing LANs

Lattis™ System 2000



Each hub has 16 RJ45 managed ports and an AUI or ST fiber port. Up to 5 hubs can be interconnected to support up to an 80 node cluster. The 2803 and 2804 have built-in management that allow users to monitor and diagnose individual ports. For users requiring in more management capabilities, the 2813 and 2814 offer SNMP and RMON, respectively.

ORDERING GUIDE

Model	Managed	SNMP	RMON	AUI	ST-Fiber	Price
2803*	•				•	\$ 869.00
2813-04	•			•	•	\$ 2129.00
2813-05	•		•		•	\$ 1355.00
2804*	•				•	\$ 1159.00
2814-04	•			•	•	\$ 2420.00
2814-05	•		•		•	\$ 1645.00

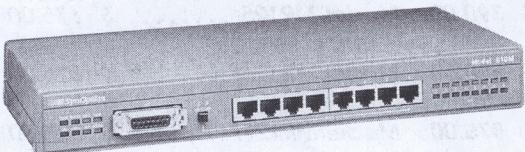
ACCESSORY

988 Expansion cable to connect hubs \$ 35.00

* Expansion cable provided

For Small Offices

Lattis™ System 800



This 8 port 10BaseT hub is perfect for small Ethernet environments. Plug-n-play, this hub lets users quickly and easily build networks without any fuss. The 800 is a managed hub while the 810M also has integrated SNMP capabilities for even more complete control and diagnostics.

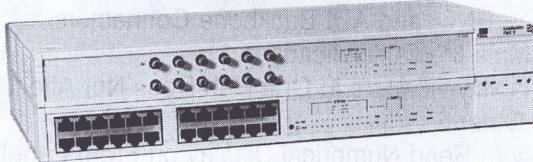
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Model 800	\$ 290.00
8-port RJ45, 1 AUI	
Model 810M	\$ 775.00
8-port RJ45, 1 AUI, w/SNMP	
Model 980-647	\$ 35.00
19" rack mount kit	

Stackable Ethernet Hubs

LinkBuilder® FMS II Series



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Discover why 3COM's reputation for building reliable and well designed products is richly deserved. The LinkBuilder FMS II Stackable Ethernet Hubs provide flexible, easy-to-configure systems for departmental and remote offices.

As part of 3COM's SuperStack strategy, the FMS II series supports every Ethernet media type and is fully compatible with other units that support token ring, SNA, remote access, routing, and switching. LinkBuilder FMS II Stackable Ethernet Hubs can keep your initial investment low, letting you add and expand however and whenever you need.

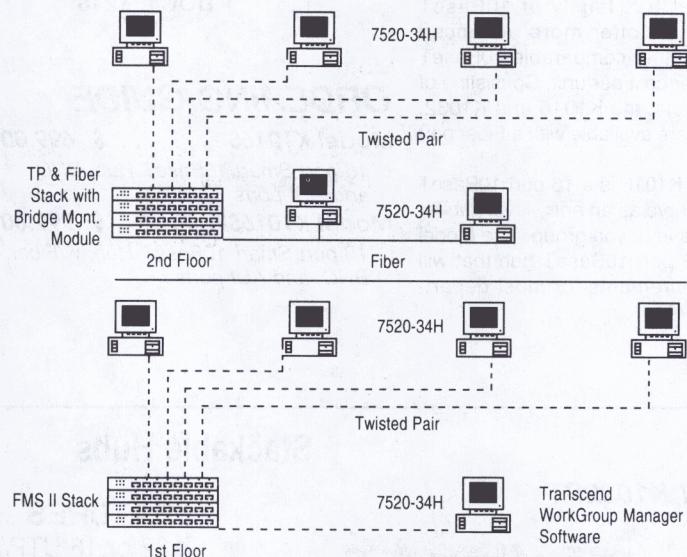
To expand or mix and match your network, simply attach the Linkbuilder cable (Model 3C625), or slide in the management board to manage a stack. Use the table provided to quickly determine which model is ideal for your needs.

Tech. Tip

Don't hesitate to contact Industrial Computer Source's Application Engineering Staff for free advice on designing and building your network.

FEATURES

- Mixed-Media: 12 and 24-Port RJ45, 6-Port ST Fiber or a 24-Port Telco Hub
- Standard RMON Support for Tracking, Storing, and Analysis of Network Traffic
- Uses 3COM's Patented LAN Security Architecture to Protect Sensitive Data from Unauthorized Access
- Optional Redundant Power System
- Optional SNMP Module to Manage All Stacked Hubs
- Stack up to Eight in One Cluster



ORDERING GUIDE

STACKABLE HUBS

Model	Connection	# of Ports	AUI Port	-Trans Int/ Bridge Slot	Max. # ports	Price
3C16670	TP(RJ45)	12	1*	1*	104	\$ 855.00
3C16671	TP(RJ45)	24	1	1	208	\$1500.00
3C16665	Fiber (ST)	6	1	1	208	\$2225.00
3C16672	Telco (TP-50 pin)	24	1	1	64	\$1500.00

* The 12-port TP hub does not support simultaneous use of both the AUI & transceiver port.

ACCESSORIES & EXPANSION MODULES

3C16630	Linkbuilder FMSII Management Module	\$ 679.00
3C15000D	Transcend Workgroup Manager (V3.0)	\$ 675.00
3C16630	Linkbuilder FMSII Management Module	\$ 679.00
3C16040	Linkbuilder FMSII Bridge Management Module	\$ 1649.00
3C18011	Linkbuilder FMSII Redundant Power Supply	\$ 1215.00
3C16060	Bridge Micro Module (Plug-in)	\$ 729.00
3C625	Expansion cable for attaching stackables	\$ 59.00
3C16050	19" Rack Mount Kit	\$ 49.00

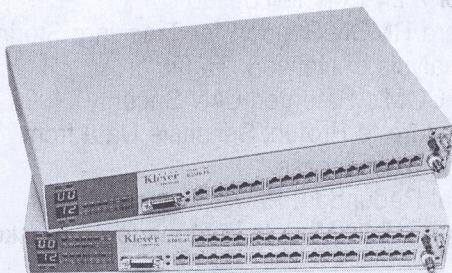


Klever®

Ethernet Workgroup Hubs

For Departmental Networks

K1016 & K1032 Series



The KleverHUB™ family of 10BaseT workgroup hubs offer more advanced features than other comparable 10BaseT hubs at a lower cost per unit. Consisting of two product sets: the K1016 and K1032. Both versions are available with a Fiber port (F).

The Model K1016 is a 16 port 10BaseT hub that can serve as an entry level hub for up to 16 users in a workgroup. The Model K1032 is a 32 port 10BaseT hub that will meet the requirements for most departmental Ethernets.

FEATURES

- UTP Connectors for Flexibility
- Fiber, BNC, and AUI Backbone Connectors for Multi-Media Applications
- Reliability—Failure in One Hub Does Not Affect the Others
- Easy to Read Numerical Display on Front Panel

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1218

ORDERING GUIDE

Model K1016S \$ 699.00

16 port Smart 10BaseT Hub, BNC and AUI ports

Model K1016SF \$ 999.00

16 port Smart 10BaseT Hub, w/Fiber, BNC, and AUI ports

Model K1032S \$ 1399.00

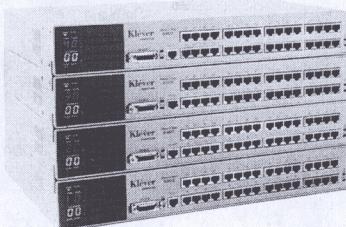
32 ports Smart 10BaseT Hub, BNC, and AUI

Model K1032SF \$ 1699.00

32 ports Smart 10BaseT Hub, Fiber, BNC, and AUI

Stackable Hubs

Model K1032ST



The KleverHUB™ family of 10BaseT workgroup hubs offer the lowest connectivity cost per managed ports for Ethernet Local Area Networks. Consisting of two product sets: the K1016ST and K1032ST, both are compatible with IEEE802.3 (10BaseT) standard for Ethernet, and offers flexibility, reliability and management at a very economical price.

The Model K1016ST is a 16 port stackable 10BaseT hub that can serve as an entry level hub for up to 16 users in a workgroup. The Model K1032ST is a 32 port stackable 10BaseT hub that will meet the requirements for most departmental Ethernets. Both hubs feature modular RJ45 host ports for unshielded/shielded twisted pair connections on the front panel.

FEATURES

- 32 or 16 UTP/STP Ports per Hub
- 1 AUI Port per Hub
- 1 Optional Port per Hub AUI to Fiber, or BNC, or UTP
- Stacks up to 4 Hubs for 128 UTP/STP Ports and 4 AUI and 4 Optional Ports
- Upgradable to SNMP Management
- In-Band and Out-of-Band Management

ORDERING GUIDE

Model K1016ST \$ 895.00

16 ports Stackable 10BaseT Hub, AUI and Custom port

Model K1032ST \$ 1685.00

32 ports Stackable 10BaseT Hub, AUI and Custom port

ACCESSORY

Model KSNMP \$ 699.00

SNMP Module

Tech. Tip:

Combine the SNMP module with the KVIEW Windows-based software to build and maintain a controlled, managed network. (See next page)

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1219

Klever® Ethernet Hub

For Small Offices

Model UTP8L



The UTP8L Ethernet 10BaseT hub is designed for plug-n-play use in a UTP (Unshielded Twisted Pair) LAN environment. The hub combines high performance with a low-cost hardware solution. The cost effective design includes 8 twisted pair ports and 1 BNC/AUI port. All 9 ports are functionally equivalent and can be used for direct connection devices with the appropriate Ethernet interfaces.

FEATURES

- Complies with IEEE802.3 10BaseT
- Three LEDs to Indicate Activities of the Hub
 - Collision LED
 - Activity
 - Power LED
- Provides 9 Port Ethernet Multi-Port Repeater
 - 8 Twisted Pair Port
 - 1 BNC/AUI Port
- Jabber Function to Isolate Network Failures (Auto-Partition)
- Automatic Preamble Generation Minimizes Bit Loss

ORDERING GUIDE

Model UTP8L \$ 150.00
8 ports 10BaseT hub with BNC/AUI

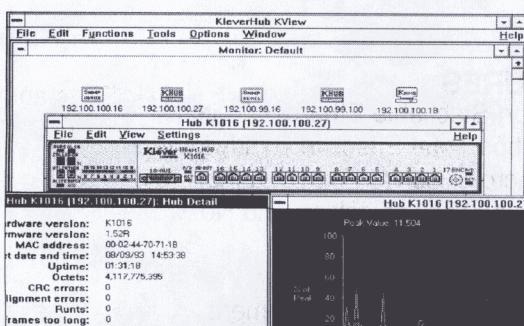
1-800-677-7329
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FAXLINE
DOC# 1220

Tech. Tip:

With auto-partitioning for each port, the hub will automatically disconnect a device producing noise or excessive collisions. The device will automatically be reconnected when the error condition is cleared. Data packets are automatically truncated. This prevents a device from blocking the network by transmitting a continuous data stream and illegal packets.

Network Management Software for PC Windows Applications

Model KVIEWIB



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC# 1221

Tech. Tip:

Works with the KNSMP module for the KleverHUB™ Family

FEATURES

- Log-on Facility with Password Protection-Prevents Unauthorized Access and Provides Maximum Network Protection
- Auto Discovery of Nodes
- Display KView Front Panel
- Plot in Real Time. Hub and Port Graphical Information
- Control and Rest Hub
- Enable/Disable Individual Ports
- Automatic Alarm Event Notification
- Monitor and Display Alarm Messages in Real Time

ORDERING GUIDE

Model KVIEWIB \$ 399.00

Windows-based SNMP, In-band Network Management Software

Model KVIEW00B \$ 399.00

Windows-based, Out-of Band Network Management Software

Model OPENVIEW \$ 1750.00

For HP OpenView Windows-based SNMP Software



INDUSTRIAL COMPUTER SOURCE

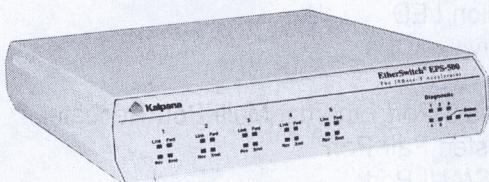
800-459-7442

ETHERNET

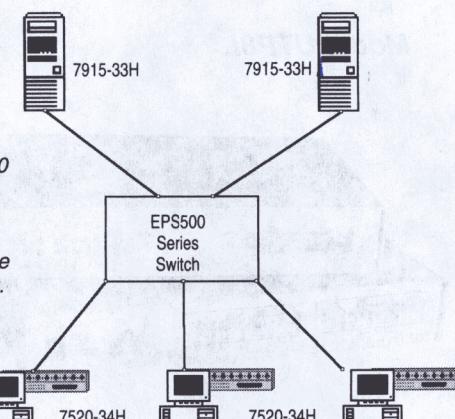
Kalpana & ONET

Ethernet Workgroup Switches

Model EPS500 Series



Kalpana



EtherSwitch EPS500 is ideal for interconnecting 10BaseT hubs, front ending file servers to double Ethernet throughput.

The EtherSwitch EPS500 Series 10BaseT accelerator is a notebook size Ethernet switch that doubles the effective throughput of 10BaseT workgroups. The 5 port device utilizes Kalpana's parallel LAN architecture technology to support two simultaneous conversations, doubling the effective Ethernet throughput to 20Mbps.

With Kalpana's "on-the-fly" switching technology, a packet appears at the output port before it has finished entering the input port. During normal operation, packets moving through the EPS500 are delayed no more than 40 microseconds, which is 20 times less than that of bridges and routers using store-and-forward technology.

SPECIFICATIONS

Ports	5 port, 10BaseT, RJ45
Buffers per Port	256 full-size packets per port
Addresses	1700 addresses per port, 4400 per system
Address Table	Transparent, automatic self learning
Filter/Forward Rate	74400 pps/37200 pps
Switching Delay	4μsec from first input bit to the first output bit
Protocol Compatibility	Transparent to all higher level protocols such as NFS, XNS, IPX, TCP/IP, DECnet, AppleTalk, etc.

1-800-677-7329

EXPRESS SOURCE-BOOK

FAXLINE

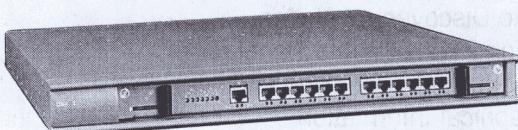
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ORDERING GUIDE

Model EPS500BM1 \$ 2495.00
5 port EtherSwitch with SNMP	
Model EPS500B31 \$ 2495.00
5 port EtherSwitch with Full Duplex	
Model EPS500BM31 \$ 2995.00
5 port EtherSwitch with SNMP and Full Duplex	

ONET

Model LB2000



1-800-677-7329

EXPRESS SOURCE-BOOK

FAXLINE

DOC#: 1223

FEATURES

- 12 Port Stackable Ethernet Switch
- 120Bbps Total Effective Bandwidth
- 40 Micro Seconds Fixed Latency
- Completely Nonblocking and No Ethernet Frame Loss
- 100% Throughput
- Plug-and-Perform Management
- Upgradeable to FDDI, Fast Ethernet, ATM

The LB2000 Ethernet switching hub contains a 12 port module. Every port on the LB2000, whether operating at full or half duplex Ethernet speeds, can transmit/receive at full capacity, simultaneously and without any loss of performance.

The LB2000 is SNMP-managed and supports the 802.1d spanning tree routing algorithm to prevent loops and to support

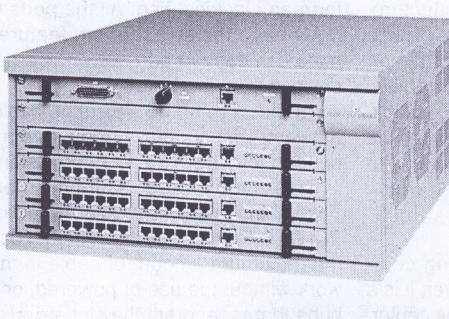
network fail-safe redundancy. In addition, the LB2000 features full duplex Ethernet capability and easy connectivity to high bandwidth devices based on Fast Ethernet, ATM or FDDI.

ONET's family of Ethernet switches increases your network's performance while protecting your investment in existing infrastructure.

ORDERING GUIDE

Model LB2000 \$ 9540.00
12 port switching hub w/SNMP and back-pressure architecture	
Model LB1000 \$ 5940.00
12 port standalone switch, no back pressure, no SNMP	

Model LB5000



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC# 1224

FEATURES

- 12 to 48 Port Ethernet Switch
- 480Mbps Total Effective Bandwidth
- 40 Micro Second Fixed Latency
- Completely Non-blocking with No Ethernet Frame Loss
- 100% Throughput Performance
- Plug-and-Perform Management and Redundant Power Supplies for Fail-Safe Operations
- Modular Design and Hot Swapping for Easy Expansion
- Upgradeable to FDDI, Fast Ethernet, ATM

ETHERNET

The LB5000 Ethernet switching hub, based on ONET's innovative MetaSwitching architecture, enables all ports to reach maximum Ethernet throughput simultaneously without blocking. The LB5000 fully implements the industry's first distributed ASIC-based cell-architecture providing excellent performance, high integration level, high reliability and excellent design security.

The scaleable LB5000 Ethernet switching hub contains four slots, each capable of holding a 12 port module, thereby supporting configurations of between 12 and 48 ports.

The LB5000 Ethernet switching hub maintains a fixed 40 usec cut-through delay for all types of communications. Because the latency remains constant, both network load and retransmission overhead are minimized. High-performance, Fixed-latency and the Modular Interface makes the LB5000 ideal for bandwidth-intensive environments—like hi-res graphics, video and multimedia.

ORDERING GUIDE

Model LB5000 \$4995.00

Chassis and Power Supply ONLY

POWER SUPPLY OPTION

Model PS5000 \$1995.00

Additional Power Supply

INTERFACE MODULES

Model M8T \$1850.00

Module 8 RJ45

Model M4T/1A \$ 990.00

Module 4 RJ45 + 1 AUI

Model M4T/1F \$1479.00

Module 4 RJ45 + 1 F.O.

Model M4F \$2935.00

Module 4 port F.O.

Model M6C \$2975.00

Module 6 port BNC

REQUIRED EXPANSION MODULES

Each LB5000 **MUST** include at least 2 Interface Modules on the main board according to the following table. Customers **MUST** select one module from **Column 1** and the corresponding module in **Column 2**. Additional modules can be added on a per-slot basis—up to 4 modules in a single chassis.

Column 1	Column 2	Description
M8T	M4T/1A	12 port RJ45 or 11 port RJ45 + 1 AUI
M8T	M4T/1F	11 port RJ45 + 1 F.O.
M8T	M4F	8 port RJ45 + 4 F.O.
M8T	M6C	6-8 port RJ45 + 6 - 4 BNC
M4F	M4F	8 port F.O. (2 additional RJ45 instead of management)
M6C	M6C	12 port BNC
M6C	M4F	6 port BNC + 4 port F.O.

For pricing, simply add the individual model prices listed in the Ordering Guide.



TOKEN RING

Token Ring Tutorial

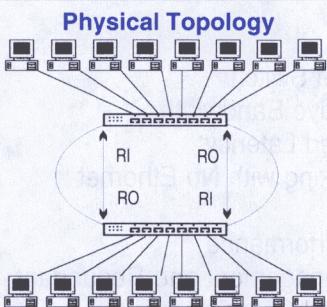


Figure 1

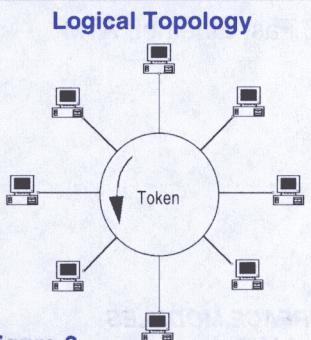


Figure 2

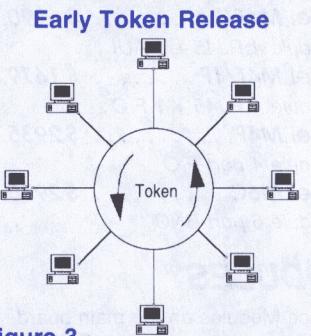


Figure 3

Tech. Tip:

Cable length is just ONE factor used to calculate MTD—other factors include equivalent cable length (ECL), the number of nodes and the potential for the ring to effectively double back on itself. Contact Industrial Computer Source's Application Engineering Staff for more information on configuring your network.

A Quick Look at Token Ring

Proposed by IBM in the 1980s, and later drafted and accepted by the IEEE 802 group, Token Ring (also called IEEE 802.5) is a robust, proven network architecture. Based on a token-passing scheme, Token Ring guarantees that each station has an opportunity to transmit at regular intervals. This control access method is more reliable than CSMA/CD and when combined with the physical star-topology, provides an easier method to detect and isolate network errors.

TOPOLOGY

As the name implies, Token Ring communicates as a logical ring. However, it is a physical star with a wiring hub in the center. This wiring hub is usually a Multistation Access Unit (MAU), the improved version, a Controlled Access Unit (CAU), or similar device. (see Figures 1 & 2)

TOKEN-PASSING THEORY

Stations (PC) gain access to the cabling medium via a token that is passed around the ring. The token circulates the ring, remaining in an idle state until a station needs to transmit on the ring. A station needing to transmit data waits to grab the token. Every station on the ring has the opportunity to grab the token, but a station can only grab the token when the token is not being used by another station.

The network devices are connected to the MAU ports via cables called lobe cables. Each port on the MAU has an internal relay that opens when the network device that is cabled to it attempts to access the network. The NIC sends a DC current to open the relay. If the device is not using the network, the relay remains closed.

One each end of an MAU is a port for cabling it to another MAU, for the purpose of expanding the network. Expanding the network entails simply connecting the RO port of the existing MAU to the RI port of the new MAU.

The unused RI and RO ports on the MAUs have self-shorting data connectors that automatically loop the cabling back to form an electrical ring. All the ports on the MAU have the self-shorting feature. This makes it easy to add or remove network devices from the MAU.

In the case of long-distance cable runs between wiring closets, repeaters may be needed to compensate for the distance.

Users must be careful not to exceed Token Ring's Maximum Total cable Distance (MTD), a formula which is used to describe the maximum amount of cable in the network without the use of powered, or active hubs that regenerate the signals.

4MBPS VS. 16MBPS (and ETR)

The main difference between 4Mbps and 16Mbps Token Ring is bandwidth. With 4Mbps Token Ring, Maximum-size frames are about 4500 bytes, while the 16Mbps Token Ring frames are four times that size—18000 bytes. Another difference in the 16Mbps speed is the use of Early Token Release (ETR) built into the Token Ring architecture. ETR allows two tokens to travel on the ring at the same time. (see Figure 3)

Because ETR allows two frames on the 16Mbps ring, data frames spend less time on the ring and more bandwidth is available. This differs from 4Mbps, which holds the token until it receives the old data.

MORE ON THE TWO SPEEDS

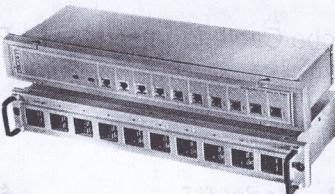
Although most Token Ring equipment can operate at either speed, the two types are incompatible with each other in the same network segment, and will typically cause network failure until the incompatibility is removed.

Token Ring Specifications

	Shielded Twisted Pair STP Type I	Unshielded Twisted Pair UTP Type III
MTD		
4Mbps	400m	225m
16Mbps	180m	100m
Max. # Nodes		
4Mbps	260	132
16Mbps	130	66

Olicom® & Intel® Token Ring Products

Model OC3626



The Olicom® Multistation Access Units (MAU) are available in either STP or UTP versions. The MAU inserts active stations into the Token Ring network and removes inactive or defective stations from the network. The 8 lobe connectors, as well as the ring-in and ring-out ports, support either 8 pin RJ45 or IBM Cabling System plugs.

8 Port MAU

FEATURES

- Plug in Compatibility with IBM Multistation Access Unit 8228
- Built in Diagnostic Facility
- LED Indicators to assist During Network Installation and Troubleshooting

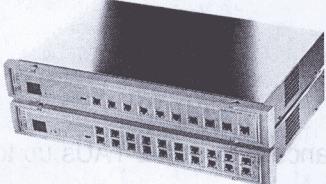
All products fully comply with the IEEE 802.5 token ring standard and support both 4Mbps and 16Mbps ring speeds. The OC3626 are 19" rack-mountable and include LED indicators to display active lobes.

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1225

ORDERING GUIDE

Model OC3626 \$ 595.00
TR MAU 8 UTP (Type III) passive, 16/4Mbps
Model OC3628 \$ 595.00
TR MAU 8 STP (Type1) passive, 16/4Mbps

Model OC3671



The Olicom® CAM is an intelligent stackable hub for Token Ring networks and it integrates the features of both a Controlled Access Unit (CAU) and a Lobe Attachment Module (LAM). The Olicom® CAM, targeted at small workgroups and remote branch offices, is a cost effective solution that does not sacrifice performance or reliability and is 100% IBM compatible.

10 & 20 Port CAM

COMMON FEATURES

- Supports 16Mbps and 4Mbps Token Ring Networks
- Supports UTP Cabling without Filters

ORDERING GUIDE

Model OC3671 \$ 2195.00
CAM, UTP, 10 stations, 16/4Mbps
Model OC3672 \$ 2995.00
CAM, UTP, 20 Stations 16/4Mbps

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1226

Token Ring LAN Adapters

Common Features

- STP(DB9) and UTP (RJ45) Connections
- 128Kb DRAM On-board
- On-board UTP Filter
- Media

Features

Model	Price
PCLA8310	\$ 495.00
EILA8235A	\$ 550.00
EILA8245A	\$ 750.00
8115-TRE	\$ 299.00

• 4/16Mbps Operation
• DMA Bus Master in 16bit Mode
• I/O Mapped in 8bit Mode

• 4/16Mbps Operation
• EISA Bus Master DMA Transfer

• 4/32Mbps Operation
• Bus Master DMA Transfers
• 32bit EISA Bus Master

• 1 Standard DB9 Connector for STP Wiring, 1 RJ45 Connector for On-board Media Filter or UTP Wiring
• Auto-boot ROM Capability
• Operates in 16bit Mode
• for Compatibility with Both AT and EISA Machines

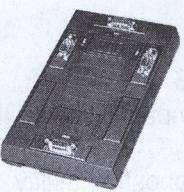


Token Ring Products/Cables

TOKEN RING

Model LAU-2

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC# 1103



Token Ring LAU

FEATURES

- Shares One Lobe Cable to Attach 2 or 4 Ports
- 4 or 16 Mbps
- No External Power Required

ORDERING GUIDE

Model LAU-4	\$ 360.00	Model LAU-2	\$ 249.00	Model TST.....	\$ 60.00
4 port (DB9)		2 port (DB9)		Charger (DB9) with RJ45 adapter (required for LAU)	

Model TAU-1

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC# 1104



Token Ring TAU

FEATURES

- Creates a Small Network Segment From One Lobe Cable Attachment
- 4 and 16 Mbps
- No External Power Required

ORDERING GUIDE

Model TAU-1	\$ 169.00
Unit, manual, 4/16Mbps, Type III (UTP)	

Model TCR/16



Active Token Ring Repeater

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC# 1105

FEATURES

- Extends the Distance Between 2 TAUs up to 2,470ft (750m)
- 4 Mbps or Switchable 4/16 Mbps
- Detects Cable Break & Performs Loopback

ORDERING GUIDE

Model TCR/4	\$ 995.00	Model TCR/16	\$ 1440.00	Model TCR/16/RJ-45 ..	\$ 1440.00
4 Mbps only, STP (Type I)		4/16 Mbps, STP (Type I)		4/16 Mbps, Type III (UTP)	

Token Ring Adapter cards offered by Industrial Computer Source include on-board filter media for Type III cabling attachments and will operate at 16Mbps using type III cable assemblies.

All cable assemblies are PVC jacketed for short run use in applications not requiring plenums. Check your local regulations for Teflon jacketed cable requirements or contact a local contractor for custom installations.

ETHERNET

10BASE-2 - THINNET - CO-AXIAL CABLE ASSEMBLIES

Model	Length	Connectors	Price
10B2-10	10ft	BNC, M/M	\$ 20.00
10B2-15	15ft	BNC, M/M	\$ 25.00
10B2-25	25ft	BNC, M/M	\$ 35.00
10B2-50	50ft	BNC, M/M	\$ 45.00

10BASE-T - UTP (RJ45) CABLE ASSEMBLIES

Model	Length	Connectors	Price
10BT-10	10ft	RJ45, M/M	\$ 8.00
10BT-15	15ft	RJ45, M/M	\$ 9.00
10BT-25	25ft	RJ45, M/M	\$ 10.00
10BT-50	50ft	RJ45, M/M	\$ 13.00

TOKEN RING

TYPE III - UTP (CATEGORY 4)

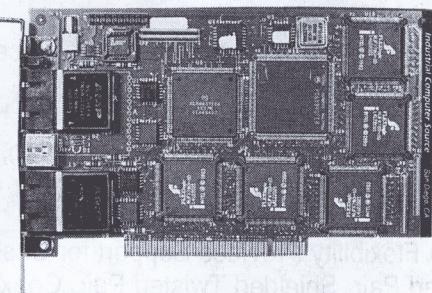
Model	Length	Connectors	Price
TR3-10	10ft	RJ45, M/M	\$ 8.00
TR3-15	15ft	RJ45, M/M	\$ 9.00
TR3-25	25ft	RJ45, M/M	\$ 10.00
TR3-50	50ft	RJ45, M/M	\$ 13.00

CONNECTORS

Model BNCTEE.....	\$ 3.00
BNC T-Connector, F/M/F	
Model BNC50	\$ 5.00
50 ohm terminator, BNC, Male	
Model BNCFF.....	\$ 3.00
BNC Straight Through Connector, F/F	

Network Adapters

Model 2200-FSM



1-800-677-7329

EXPRESS SOURCE-BOOK

FAXLINE

DOC# 1227

Fiber Distributed Data Interface (FDDI) networks provide the highest (100Mbps) data transfer rate of any standard network in the world. FDDI's services are required by emerging multimedia, imaging, windowing and database applications that demand high performance and guaranteed bandwidth. Rockwell FDDI cards feature full SMT support for auto-diagnostics during troubleshooting.

FEATURES

- Available with FDDI MIC (Fiber) or RJ45 (UTP) Connectors
- Compliant with all Applicable ANSI/ISO Standards
- Available with 1300nm for 62.5/125micron Fiber
- 128kByte Packet Buffer (ISA & EISA versions)
- PCI Version Supports FIFO Buffering for Simultaneous, Full Speed, Zero Latency PCI & FDDI Data Transfers

ORDERING GUIDE

Model 2200-FD \$ 1795.00

PCI/FDDI/DAS/SC, software, manual

Model 2200-FSS \$ 1295.00

PCI/FDDI/SAS/SC, software, manual

Model 2200-FSM \$ 1295.00

PCI/FDDI/SAS/MIC, software, manual

Model 2200-UTP \$ 795.00

PCI, software, manual

Model 1275-F \$ 1295.00

EISA PCI/FDDI/UTP, software, manual

Model 1275-UTP \$ 895.00

EISA UTP/FDDI connector version, software, manual

Model 1265-F \$ 995.00

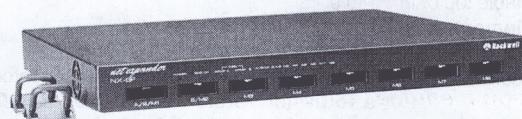
ISA FDDI connector version, software, manual

Model 1265-UTP \$ 745.00

ISA UTP/FDDI connector version, software, manual

FDDI Concentrator

Model NX-8F



FEATURES

- Supports 8 FDDI Ports
- Compliant with all Applicable ANSI/ISO Standards
- Available with FDDI MIC (Fiber) or RJ45 (UTP) Connectors
- FDDI SMT Version 7.3
- RS232C Port for External Diagnostics

1-800-677-7329

EXPRESS SOURCE-BOOK

FAXLINE

DOC# 1228

Rockwell Network Systems NetExpander™ concentrators provide managed connectivity for single or dual attached stations; increasing your network's reliability, while simplifying configurability and enhancing overall network manageability.

An integrated SNMP MIB II agent allows the NetExpander™ to be managed by an SNMP manager and an RS232C port is

provided for out-of-band diagnostics and setup.

The NetExpander™ conforms with all applicable ANSI/ISO standards for FDDI, and supports FDDI on both fiber and unshielded twisted pair media, making it compatible with virtually all Premises Distribution Wiring Systems

ORDERING GUIDE

Model NX-8F \$ 7875.00

FDDI Concentrator, 8 port Fiber

Model NX-8UTP \$ 4725.00

FDDI Concentrator, 8 port UTP

Model NX-6/2 \$ 5515.00

FDDI Concentrator, 6 UTP, 2 Fiber

FDDI

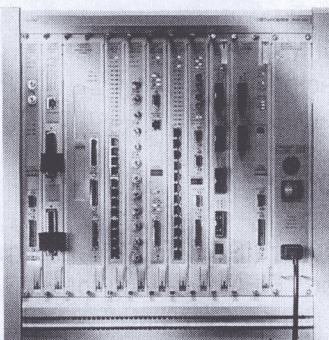


INDUSTRIAL COMPUTER SOURCE

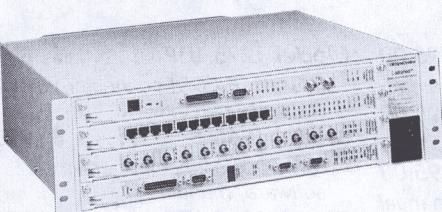
800-459-7442

Bay Networks™ (Synoptics) LattisNet™ Systems 3000 Concentrators

Model 3000N (12-Slot)



Model 3030-01-HN (4-Slot)



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1229

MULTIMEDIA CONCENTRATORS
System 3000 concentrators feature a multiple-bus backplane architecture which enables them to simultaneously support a combination of 10 megabit per second (Mb/s) Ethernet, 4 Mb/s and 16 Mb/s Token Ring, and 100 Mb/s Fiber Distribution Data Interface (FDDI) networks. Through a variety Ethernet, Token Ring and FDDI connectivity, internetworking and networking management modules, you can create custom configurations that meet your specific networking needs.

A single Model 3000 can simultaneously support 5 independent Ethernet segments, 2 Token Ring networks and 3 FDDI paths, delivering maximum flexibility for a wide variety of network topologies.

The Model 3000 chassis offers 12 slots to hold any combination of System 3000 modules supporting IEEE 802.3-compatible Ethernet over unshielded twisted pair wire, shielded twisted pair wire, fiber optic cable or thin coaxial cable; IEEE 802.5-compatible Token Ring over unshielded or shielded twisted pair wire; an American National Standards Institute (ANSI) X3T9.5 FDDI over fiber optic cable and shielded twisted pair wire.

When configured in an Ethernet network with a retiming or networking management module, the concentrator provides full IEEE 802.3 repeater functionality. The System

3000 concentrator can also accommodate LattisNet™ Ethernet Switching Engines™ as well as local and remote bridges and routers, delivering integrated internetworking solutions from a single platform.

The Model 3000 can be installed in 2 mounting arrangements: on a table top or in a EIA-standard 19-inch equipment rack, which can hold 11 rack-mounting units. Four different versions of the concentrator are available.

MULTI-SEGMENT ETHERNET

The Model 3000N Premise Concentrator includes a chassis, a front-accessible modular fan tray, a front-accessible Model 3002 460W power supply, and a backplane bus capable of supporting up to 5 independent, manageable Ethernet segments. The backplane also includes a dedicated network management interface bus and power supply bus.

MULTIPLE ETHERNET/TOKEN RING NETWORKS

The Model 3000NT Premise Concentrator is identical to the Model 3000N, with the addition of two Token Ring buses on the concentrator backplane. The Token Ring buses support two independent, manageable Token Rings, each of which can operate at either 4 Mb/s or 16 Mb/s. The Model 3000-04 can support three networks—one Ethernet and two Token Ring—simultaneously.

FEATURES

- Multiple Bus Architecture allows Integration of 5 Ethernet, 2 Token Ring and 3 FDDI Networks into a Single Platform
- Modular Design, along with a Wide Choice of Modules, Enables the Model 3000 to be Customized to meet Specific Networking Needs
- Support for Integrated Ethernet Switching, Bridging and Routing Eliminates need for External Equipment
- Media Flexibility Provides Support for Unshielded Twisted Pair, Shielded Twisted Pair, Coaxial and Fiber Optic Ethernet, Shielded Twisted Pair and Unshielded Twisted Pair Token Ring, and Shielded Twisted Pair and Fiber Optic FDDI from a Single Platform
- Supports full IEEE 802.3 Ethernet Repeater Functionality, enabling Support for Greater Distances and Intercommunication Between Multiple Media Types
- Supports full IEEE 802.5 Token Ring Ring-In/ Ring-Out and Repeater Capabilities to create Large Single Rings without Bridging or Routing
- Implements full ANSI FDDI Standard over Three 100 Mb/s Paths (Primary, Secondary and Local)

ETHERNET, TOKEN RING AND FDDI

The Model 3000S Premise Concentrator is identical to the Model 3000NT, with the addition of an FDDI bus configured to support up to three separate ring paths, primary, secondary or local-running at 100 Mb/s.

REDUNDANT POWER SUPPLIES

The Model 3030 Department Concentrator is a four-slot version of the Model 3000, designed for medium-density departmental networks. Like the Model 3000, the Model 3030 accommodates any combination of System 3000 host, network management or internetworking modules supporting both Ethernet and Token Ring.

ETHERNET ONLY

The Model 3030-01 includes a chassis, an easily-accessible power supply/fan unit, and a backplane with Ethernet, network management interface and power supply buses.

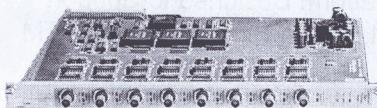
ETHERNET/TOKEN RING

The Model 3030-04 is identical to the Model 3030-01 and includes two Token Ring buses on the concentrator backplane. The Token Ring buses support two independent Token Rings, each of which can operate at either 4 Mb/s or 16 Mb/s. The Model 3030-04 can support three networks—one Ethernet and two Token Ring—simultaneously.

Order Now!

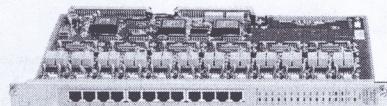
Bay Networks™ (Synoptics) LattisNet™ Systems 3000 Concentrators

SPECIFICATIONS



NETWORK PROTOCOLS

Ethernet	10 Mbps
Token Ring	4/16Mbps
FDDI	100 Mbps (Model 3000S)



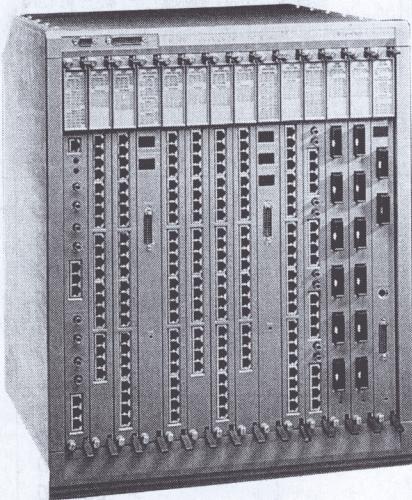
ORDERING GUIDE

Model	Description	Price
3000 CHASSIS		
3000N	12-slot, Ethernet-Only Chassis	\$ 2229.00
3000NT	12-slot, Ethernet & Token Ring Chassis	\$ 2615.00
3000NTR	Same as 3000NT with redundant power supply and 3100R management module	\$ 3875.00
3000S	12-slot, Ethernet, Token Ring & FDDI Chassis	\$ 3875.00
3000SRC/R/02	Same as 3000S with redundant power supply and 3100R management module	\$ 5235.00
3030-01-HW	4-slot Ethernet-only Chassis	\$ 729.00
3030-04-HW	4-slot, Ethernet & Token Ring Chassis	\$ 965.00
3000 Ethernet Host Modules		
3301	Ethernet, 8-port Thin coax (BNC)	\$ 1740.00
3304-A	Ethernet, 8-port Fiber (ST)	\$ 2225.00
3305	Ethernet, 12-port UTP (RJ-45)	\$ 2089.00
3308B	Ethernet, 12-port RJ-45	\$ 1355.00
3368	Ethernet, 12-port RJ-45 with LattisSecure	\$ 1549.00
Ethernet Retiming Modules		
3333	Ethernet, Retiming module - Coax (AUI)	\$ 729.00
3334-ST	Ethernet, Retiming module - Fiber (ST)	\$ 1019.00
Token Ring Host Modules		
3502B	Token Ring, 12-port Passive STP/UTP (RJ-45)	\$ 1060.00
3505B	Token Ring, 12-port Active STP/UTP (RJ-45)	\$ 1450.00
FDDI Host Modules		
3904	FDDI, 4-port multi-mode fiber (MIC)	\$ 5330.00
3905	FDDI, 4-port STP (RJ-45 shielded)	\$ 3639.00
Ethernet Internetwork Modules		
3328	Ethernet, 6-port Switching Engine (RJ-45)	\$ 3195.00
Router/Bridge Modules		
3394	Ethertalk (Localtalk), Router module	\$ 3489.00
3800-03	Ethernet, Multimedia Module (Router w/ 3800)	\$ 4160.00
3803	Ethernet, Personality Module for Port Routing (for 3800 routers)	\$ 675.00
3806	WAN, 2-port (Serial) Personality Module for Port Routing (for 3800 routers)	\$ 1159.00
10328-F	Ethernet to ATM, 12-10BaseT, 1-SONET OC-3 (155Mbps), Switch/MUX	\$ 9995.00
Token Ring Internetwork Modules		
3522A	Token Ring, Local Bridge	\$ 4845.00
Router/Bridge Modules		
3800A	Multimedia Router (v10.0)	\$ 5815.00
3800-05	Multimedia Router, Personality Module with support for Token Ring	\$ 4645.00
3805-02	Token Ring Router with Personality Module for Port Routing (for 3800 routers)	\$ 1159.00
FDDI Internetwork Modules		
3809	FDDI, Personality Module, for FDDI routing	\$ 3295.00
Ethernet Network MGMT Modules		
3313SA	Ethernet, with Advanced Super Agent, 1 AUI	\$ 4459.00
3313A-04	Ethernet, with Advanced Agent, 1 AUI	\$ 3875.00
3313A-03	Ethernet, with Basic Agent, 1 AUI	\$ 2225.00
3314SA	Ethernet, with Advanced Super Agent, Fiber (1 10BASE-FIOL port)	\$ 4845.00
3314A-04	Ethernet, with Advanced Agent, Fiber (1 10BASE-FIOL port)	\$ 4265.00
3314A-03	Ethernet, with Basic Agent, Fiber (1 10BASE-FIOL port)	\$ 2615.00
Token Ring Network MGMT Modules		
3517SA-08	Token Ring, with Super Advanced Agent, RI/RO (DB-9)	\$ 6009.00
3514-ST	Token Ring, with Advanced Agent, RI/RO (DB-9)	\$ 3875.00
3513	Token Ring, with Basic Agent, RI/RO (DB-9)	\$ 3099.00



Bay Networks™ (Synoptics) System 5000™ Network Center Hub

Model 5000N (14-Slot)



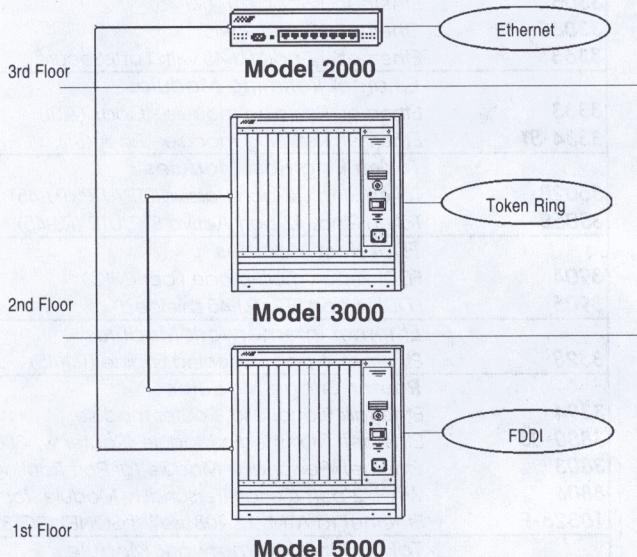
Tech. Tip:

Fully compatible with SynOptics' System 3000™ and System 2000™ intelligent hub products. (See pages 16-17)

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1230

FEATURES

- Network Center Platform Designed to Support Structural Ethernet, Token Ring, FDDI and ATM LANs
- Simultaneously Accommodates up to 12 Ethernet, 9 Token Ring and 2 Three-Path FDDI Networks with Extensive Management Features
- Modular Backplane Design Allows for easy Integration of High-Speed Packet and ATM Cell Switching Technologies
- Highly-Reliable Design includes Redundant Power, Cooling and Clocking Systems, Eliminating all Single Points of Failure
- Internal, High-Throughput Common Management Bus Provides Access to All Modules across Hub Backplane to Monitor Network Performance and Control Hub Configuration



SynOptics' Model 5000 is the first intelligent hub platform to deliver a structured networking solution for today's legacy networks with a migration path to future LAN technologies. Featuring a highly-flexible backplane architecture, the hub supports multiple 10 megabit per second (Mb/s) Ethernet, 4 and 16 Mb/s Token Ring and 100 Mb/s Fiber Distributed Data Interface (FDDI) networks simultaneously.

The Model 5000 offers 14 slots to hold any combination of System 5000 Ethernet, Token Ring and FDDI host and network management modules. Fully configured, the hub provides a powerful platform for simultaneously supporting up to 12 Ethernet segments, nine Token Rings and five FDDI ring paths with extensive management capabilities. Network managers can perform precise, detailed management operations

such as high-performance traffic monitoring and packet and protocol analysis at full line speeds.

In addition, core management capabilities are provided for up to 52 Ethernet and 26 Token Ring networks operating within the hub, providing visibility into network operating conditions. Core management allows network managers to monitor hub hardware status, control hub configuration and obtain simple network performance statistics.

The Model 5000 also provides an open path for integrating emerging technologies that will support future network growth. For instance, the hub is designed to accommodate high-speed packet switching and Asynchronous Transfer Mode (ATM) cell switching capabilities as they become available.

Three versions of the Model 5000 hub are available, each offering different backplane configuration. The Model 5000N supports full IEEE 802.3-compatible Ethernet installations for high-density Ethernet environments. The Model 5000NT is identical to the Model 5000N, with the addition of IEEE 802.5 Token Ring capabilities for mixed Ethernet/Token Ring environments. The Model 5000F is identical to the Model 5000NT, with the addition of an FDDI backplane for complex Ethernet/Token Ring/FDDI environments.

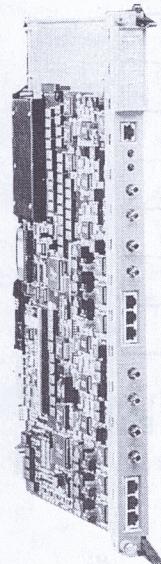
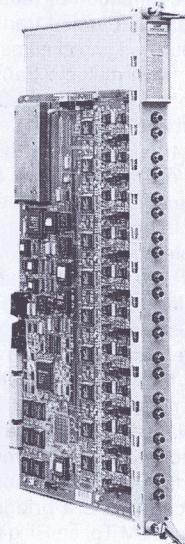
New technologies such as ATM will also be added incrementally by installing a new backplane section, enabling users to invest in a base unit today that can be easily upgraded to satisfy future requirements.

Bay Networks™ (Synoptics) System 5000™ Network Center Hub

SPECIFICATIONS

NETWORK PROTOCOLS

Ethernet	IEEE 802.3
Token Ring	IEEE 802.5 Token Ring Access Method and Physical Layer Specification
FDDI	ISO 9314-1 FDDI Physical Protocol (PHY) standard: ISO 9314-3 FDDI Physical Medium Dependent (PMD) standard: ANSI FDDI X379.5 Station Management specification
Standards Support	IEEE AUI for connections via 10Base5) IEEE 802.3 10BaseT IEEE 802.3 10Base2 IEEE 802.3 FIO RL IEEE 802.5 Token Ring ANSI FDDI X379.5 FDDI ISO 9314-1 FDDI Physical Protocol (PHY) standard ISO 9314-3 FDDI Physical Medium Dependent (PMD) standard



ORDERING GUIDE

Model	Description	Price
5000 Chassis & Components		
5000N	14-slot, Ethernet-Only Chassis	\$ 2495.00
5005N	8-slot, Ethernet-Only Chassis	\$ 1495.00
5000NT	14-slot, Ethernet & Token Ring Chassis	\$ 2995.00
5005NT	8-slot, Ethernet & Token Ring Chassis	\$ 1795.00
5000F	14-slot, Ethernet, Token Ring & FDDI Chassis	\$ 3995.00
5001	Power Supply, for 14-slot Chassis, (required for 14-slot chassis)	\$ 1000.00
5051L	Power Supply, for 8-slot Chassis, (required for 8-slot chassis)	\$ 700.00
5110	Supervisory Module, for 14-slot Chassis, (required for 14-slot chassis)	\$ 1000.00
5115	Supervisory Module, for 8-slot Chassis, (required for 8-slot chassis)	\$ 700.00
5000 Host Modules		
5304P	Ethernet, 10-port 10BASET (ST)	\$ 4995.00
5307P	Ethernet, 24-port 10BASET (RJ-45) switch with Telco D	\$ 4595.00
5308-AF	Ethernet, 16-port 10BASET (RJ-45) -- with AUI and ST	\$ 3795.00
5308A	Ethernet, 24-port 10BASET (RJ-45)	\$ 3895.00
5378-F	Ethernet, 16-port UTP (RJ-45), 4-port Fiber (ST)	\$ 4495.00
5502	Token Ring, 24-port Passive STP/UTP (RJ-45)	\$ 3595.00
5505P	Token Ring, 24-port Active-retiming STP/UTP (RJ-45)	\$ 4995.00
5575-C	Token Ring, 20-port Intelligent Dual Repeater Cluster, UTP (RJ-45)	\$ 3595.00
5904	FDDI, 6-port Multi-mode Fiber (MIC)	\$ 7795.00
5905	FDDI, 6-port UTP (RJ-45)	\$ 5795.00
Network MGMT Modules		
5310A	Ethernet, Network Management Module	\$ 4295.00
5310SA	Ethernet, Super Network Management Module	\$ 5395.00
5510-06	Token Ring, Network Management Module (with Data Collection Engine)	\$ 5995.00
5910S	FDDI, Network Management Module (both A&B connections/networks)	\$ 10995.00

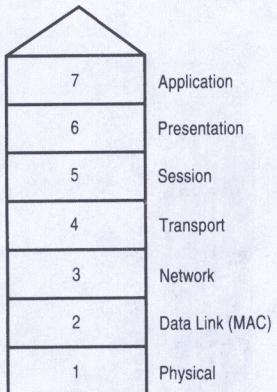
MULTIMEDIA
CONCENTRATORS



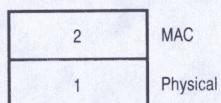
Bridge and Routers Tutorial

A Quick Look at Bridges & Routers

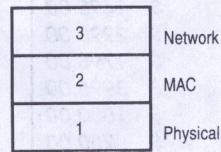
Seven Layers



Bridges



Routers



The devices used to interconnect networks are called bridges and routers. These internetworking devices can be hardware, or software-based. Software-based routers and bridges can be part of a server's operating system or can also be installed on standard computers to create dedicated, stand-alone devices. However, software only bridges and routers must depend on the server's internal memory and CPU, which can degrade network performance. For maximum performance, a stand-alone solution is usually the best choice.

BRIDGES

A bridge operates at the data link layer (layer two) of the OSI architecture. Bridges can be used to connect networks with different addresses or to segment a network (segments having the same network address). When connecting networks with different addresses, a bridge acts as an address filter; it relays data between networks with different addresses based on information contained at the Medium Access Control (MAC) level.

Simple bridges are used to connect networks which use the same physical-layer protocol, and the same MAC and logical link protocols (OSI layers one and two). Simple bridges are not capable of translating between the different protocols.

Other types of bridges, such as transitional bridges, can connect networks that use different layer-one and MAC-level protocols; they are capable of translating then layering frames.

After a physical connection is made (at OSI layer one) a bridge receives all frames from each of the networks it connects and it checks the network address of each received frame. The network address is contained in the MAC header. When a bridge receives a frame from one network that is addressed to a station to another network, it passes the frame on to the intended network.

SPANNING TREE AND SOURCE-ROUTE BRIDGING

Spanning tree prevent problems resulting from the interconnection of multiple networks by means of parallel transmission paths. In various bridging circumstances, it is possible to have multiple transmission routes exist, and to have an endless duplication and expansion or routing errors that will saturate the network with useless transmissions, quickly disabling it. Spanning trees are the method used to specify one, and only one, transmission route.

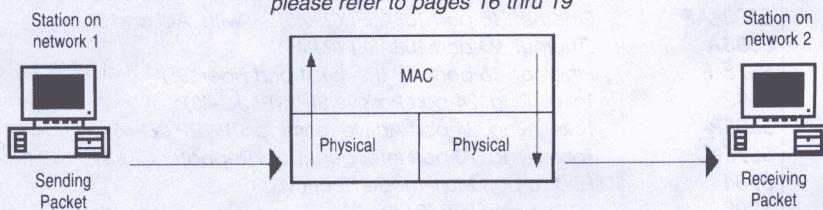
Source-route bridging is the other standard means of determining the path used to transfer data from one station to another. Stations that use source-routing participate in route discovery and specify the route to be used for each transmitted packet. Source-route bridges merely carry out the routing instructions placed into each data packet when the packet is assembled by the sending station. Source-route bridging is important because it is a bridge routing method used on IBM Token Ring networks.

ROUTERS

Routers function at the OSI network layer (one layer higher than bridges). To communicate, routers must use the same network-layer protocol. And, of course, the sending and receiving stations on different networks must either share identical protocols at all OSI layers above layer three, or there must be necessary protocol translation at these layers.

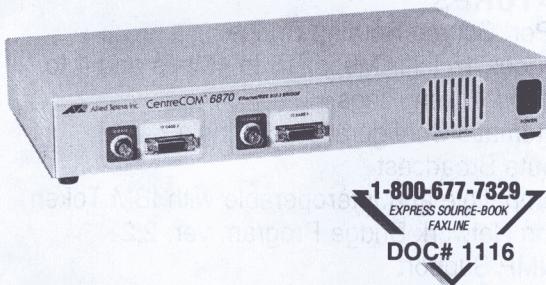
Routers can allow the transfer of data between networks that use different protocols at OSI layers one and two (physical, Medium Access Control, and Logical Link Control). Routers can receive, reformat and retransmit data packets assembled by different layer-one and layer-two protocols. Different routers are built to manage different protocol sets.

*For a complete list of
internetworking and routing options,
please refer to pages 16 thru 19*



Increase Network Length and Performance Ethernet Bridges

Model AT-6870



The AT-6870(5) bridges allow two IEEE 802.3 subnetworks to be connected into a single network. Each subnetwork may be IEEE 802.3 Ethernet or thin Ethernet. The bridges transparently forward packets between both networks. Since these bridges operate at the MAC level, all higher level protocols such as TCP/IP, DECnet, and Netware, are passed unaffected.

Many common LAN problems are solved by the Model AT-6870(5). For example, the effective length of a network can be increased by adding a bridge. Moreover, placing the bridges at natural boundaries of the workgroups increases the network performance in each segment. The reliability of a large network can be enhanced through subnetting with the AT-6870(5), which allows heterogeneous subnetworks to be interconnected.

FEATURES

- Self-learning MAC Layer Bridges
- Supports up to 2,000 MAC Addresses in Filter Table
- Two Media Options per Network Segment; Thin (10Base2) or AUI (10Base5)
- Filter at 25,000 PPS, Forward at 12,500 PPS
- IEEE 802.1 Revision D, Spanning Tree Protocol (STP)
- Simple Network Management Protocol (SNMP)

SPECIFICATIONS

SOFTWARE

Features Compliant with IEEE 802.1 STP specification
UDP/IP protocol support
Dynamic forwarding table creation
SNMP network management agent
Power-on diagnostics

POWER REQUIREMENTS

Voltage 110V: 90 to 135 VAC
220V: 180 to 270 VAC
Frequency 47 to 63 Hz
Power 50 watts

PHYSICAL

Dimensions 17.0" x 9.7" x 2.6"
(432 x 247 x 66mm)

Weight 4.4kg (9lb 12.2oz)

Temperature Operating: 0 to 50°C
Storage: -20 to 60°C

Relative Humidity 5 to 80% RHNC

Electrical/ EMI: FCC, CSA, TUV-2
Mechanical Safety: UL, CSA, TUV-GS
Approvals

ORDERING GUIDE

Model AT-6870 \$ 2350.00

Learning bridge, manual

Model AT-6875 \$ 2995.00

SNMP Learning bridge, manual

ACCESSORY

Model AT-RKMT3 \$ 40.00

Rack mount kit

Model QN604/B



FEATURES

- Choice of Two Connector Types for each Network (AUI or BNC) Switch Selectable
- Choice of Two Models, Basic or Managed (SNMP)
- Filtering Rate of 27,000 PPS
- Forwarding Rate of 14,500 PPS
- Local List Size of 10,000 Entries
- Self-sensing Power Supply, 100-250VAC, 47-63Hz

ORDERING GUIDE

Model QN604/B \$ 1425.00

Basic bridge

Model QN604/M \$ 1875.00

Managed bridge, SNMP

BRIDGES &
ROUTERS

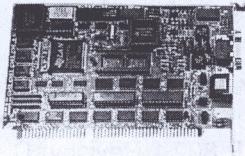
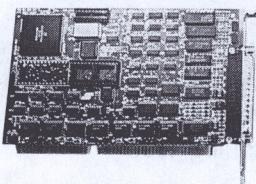


INDUSTRIAL COMPUTER SOURCE

800-459-7442

Token Ring Bridges 16/4

Model OC3146



The remote bridge 16/4 is a PC based source routing bridge card that connects two remote rings into one logical network. The connected rings can be any combination of 4Mbps and 16Mbps token ring networks. The remote bridge can operate in dedicated DOS PC or non-dedicated OS/2 PC.

Remote Bridge 16/4

FEATURES

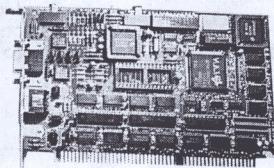
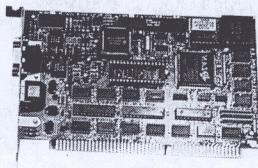
- 2 Port Source Routing Bridge
- Bridges 16 to 16Mbps, 16 to 4Mbps and 4 to 4Mbps Token Rings
- Automatic Configuration of Single Route Broadcast
- Compatible and Interoperable with IBM Token Ring Network Bridge Program ver. 2.2
- SNMP Support

ORDERING GUIDE

Model OC3146 \$3100.00
2 port remote bridge

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Model OC3150



The local bridge 16/4 is a PC-based source-routing bridge card that connects two Token Ring Networks into one Logical Network. These rings can be any combination of 4Mbps and 16Mbps token ring networks. It is easy to install and simple to manage, and provides superior price/performance.

Local Bridge 16/4

FEATURES

- 2 Port Source Routing Bridge
- Bridges 16 to 16Mbps, 4 to 16Mbps and 4 to 4Mbps Token Rings
- Automatic Configuration of Single Route Broadcast
- Compatible and Interoperable with IBM Token Ring Network Bridge Program ver. 2.2
- SNMP Support

ORDERING GUIDE

Model OC3150 \$2680.00
2 port local bridge

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1232

High-Performance Local Bridge 16/4

Model OC3401



The Wire Speed Local Bridge 16/4 is a high performance, two-port, token ring source routing bridge. The forwarding rate of the local bridge is very close to wire speed for frame sizes larger than 256 bytes. For frame sizes of 28 bytes, the Wire Speed Local Bridge will forward data at a rate of 27000+ frames per second.

FEATURES

- 2 Port Source Routing Bridges
- Bridges 16 to 16Mbps, 16 to 4Mbps and 4 to 4Mbps Token Rings
- Automatic Configuration of Single Route Broadcast

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DOC#: 1233

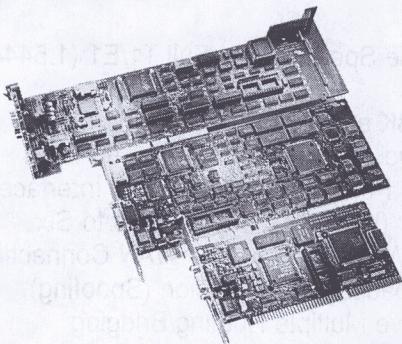
Tech. Tip:

These bridges allow you to interconnect mixed-speed Token Networks without causing a network failure.

ORDERING GUIDE

Model OC3401 \$3960.00
2 port, wire-speed bridge

Model OC3413



See page 33 for Netware and other Operating Systems

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1234

The Olicom® Router Adapters are high performance ISA, EISA and MCA Token Ring network interface cards specially designed for use in a NetWare Multiprotocol Router V.21 environment. These adapters enables users to build low cost Token Ring routers. When combined with a PC running

Novell NetWare and NetWare Multiprotocol Router software, the Olicom router adapters provide a powerful and cost-effective router product. With the router adapters, users can establish internetworking solutions, simply by employing standard NetWare and PC technology.

Router Adapters

FEATURES

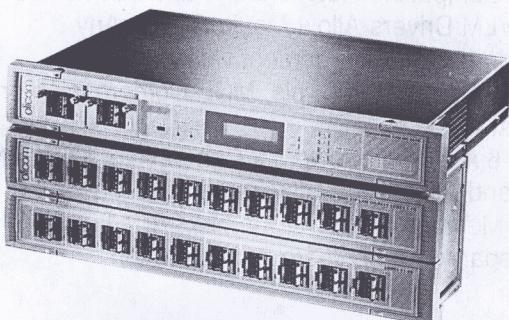
- Adhere to Industry Standards such as DLC from IBM, NDIS from Microsoft, ODI from Novell
- Fully IBM Compatible and Interoperable
- PowerMACH Driver Technology Providing a raw Frame Processing Capability of More than 30000 fps (EISA Adapter)
- Automated Menu-Driven Installation through NetWare Multiprotocol Router Software
- Easy-to-Use Diagnostic Program
- Information and Installation Program
- Easy to Manage Router Adapter/NetWare Multiprotocol Router Solution, supporting Standard NetWare Utilities such as RCONSOLE, MONITOR, TPCON, ISOCON and ATCON

ORDERING GUIDE

Model OC3413	\$ 595.00
MCA Bus	
Model OC3412	\$ 895.00
EISA Bus	
Model OC3411	\$ 595.00
ISA Bus	

Model OC3610

CAU (Token Ring Hub)



FEATURES

- Supports 16Mbps and 4Mbps Token Ring Networks
- Automatic Ring Recovery in Case of Adapter, Lobe or LAM Errors
- 100% Interoperable and Plug-Compatible with CAUs, LAMs and MAUs from IBM
- Copper Repeaters Included with Each CAU

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1235

The Olicom® Controlled Access Unit (CAU) is an IBM compatible intelligent stackable hub that allows connections of up to 80 token ring network lobe via Lobe Attachment Modules (LAM). Up to four LAMs can be connected to each CAU, and up to 20 lobes can be connected to each LAM.

ORDERING GUIDE

Model OC3610	\$ 2995.00
CAU, STP W/SNMP-LNM Supports 16/4Mbps	
Model OC3611	\$ 1995.00
20 port STP LAM, 16/4Mbps	
Model OC3612	\$ 1995.00
20 port UTP LAM, 16/4Mbps	

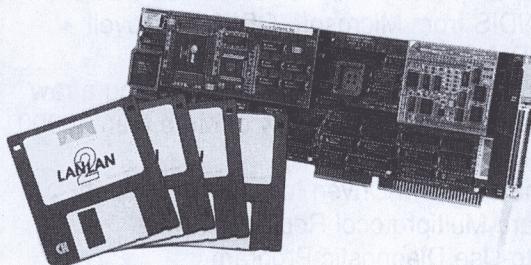
ACCESSORY

Model 3638	\$ 80.00
Type III Media Filters, 16/4Mbps	



Cisco® Remote Access

Model LAN2LAN



LAN2LAN Enterprise™ is a high performance, software-based multiprotocol router designed to meet the internetworking requirements of headquarters offices. It can be installed in a dedicated PC, or on multiple NetWare platforms. The LAN2LAN Enterprise routers enables local and remote routing and MAC-layer and source-route bridging when configured for a dedicated PC. When installed on an NetWare platform such as NetWare for SAA, NetWare Connect, of a file server, LAN2LAN Enterprise allows users to interconnect NetWare local-

area networks (LANs) without purchasing additional PC hardware.

The LAN2LAN Enterprise router is equally useful at central sites with heavy internetworking traffic and at regional offices that require cost-effective wide-area network (WAN) connections, the LAN2LAN Remote Office™ router is designed to easily connect the LAN2LAN Enterprise. WAN ports are easily added in units of two or fours as the internetwork expands, and a NetWare file serve-based router node can be reconfigured at any time as an external router.

Remote Access Router

FEATURES

- Supports Line Speeds up to Full T1/E1 (1.544/2.048Mbps)
- Includes 128K and T1/E1 Data Compression
- Supports Two or Four WAN Ports—up to 64 Connections Per Wide Area Network Interface Coprocessor (WNIC™); Supports up to Six WNICs (24 WAN Ports or 384 WAN Connections)
- Provides Broadcast Suppression (Spoofing)
- Can Interleave Multiple Routing/Bridging Protocols Over the Same Wide Area Link

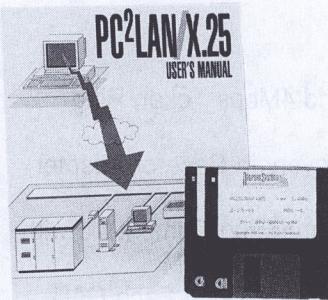
1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1236

ORDERING GUIDE

Model LAN2LAN \$ 3487.00
ISA bus version

Call for availability on
MCA version

Model PC2LAN/X25



PC2LAN/X25 is a remote PC software package providing asynchronous /X.25 access to LAN resources.

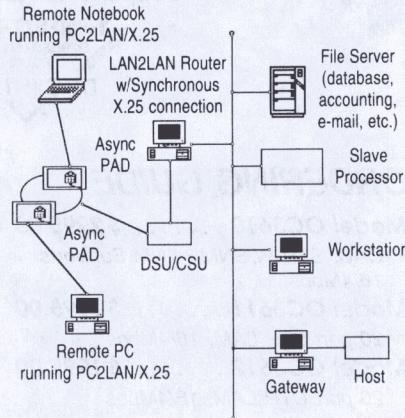
PC2LAN/X25 is a software only product which allows remote PCs to access LANs via an X.25 network using a modem. Line speeds up to 38.4Kpbs (or faster with V.Fast modems) are supported. The program runs as a TSR (Terminate Stay Resident) and requires only 12.2Kbyte of memory.

Remote PC to LAN Access

FEATURES

- Fully Compatible NetWare IPX and TCP/IP ODI and VLM Drivers Allow Monitoring by Any Standard ODI Management Utility
- Compatible with V.42 bis, MNP Compression or V.Fast Modems
- DOS 6.x and Windows 3.x Compatible. PC2LAN/X25 and All Novell Software can be Loaded in High Memory
- Transparent 8 Bit Character Operation

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DOC#: 1237



ORDERING GUIDE

Model PC2LAN/X25 . . . \$ 145.00
1 node license

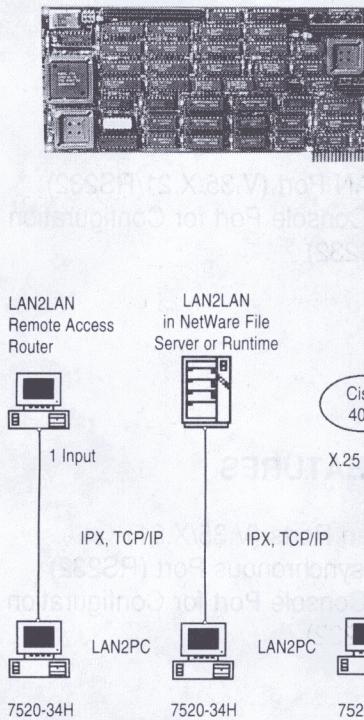
Remote Access

REMOTE ACCESS

LAN2PC

Cisco®

Remote PC to LAN Access



1-800-677-7329
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DOC#: 1238

FEATURES

- NET 2 (Normes Europeenes de Telecommunications) Certified
- Compliant with CCITT 1988 Recommendations
- Data Compression
- Switched Virtual Circuits (SVCs) and Permanent Virtual Circuits (PVCs)
- Multiple SVCs can be Used Between the Workstation and the Remote Router
- Idle SVCs Automatically Disconnected

LAN2PC provides a high-speed communications path between a single remote workstation and a central LAN. Using LAN2PC, a remote PC can access central-site LAN files, databases, printers, hosts and applications (e-mail, spreadsheet, word processors and more) via either dial-up, dedicated communications lines, or X.25 networks. Additionally, LAN2PC is available with optional data compression, allowing you to take remote workstation performance to new heights.

LAN2PC is the only remote PC product that can communicate at T1/E1 speeds with

any PPP-compliant router. LAN2PPC is able to support remote users through X.25 Public Data Networks (PDNs)

ORDERING GUIDE

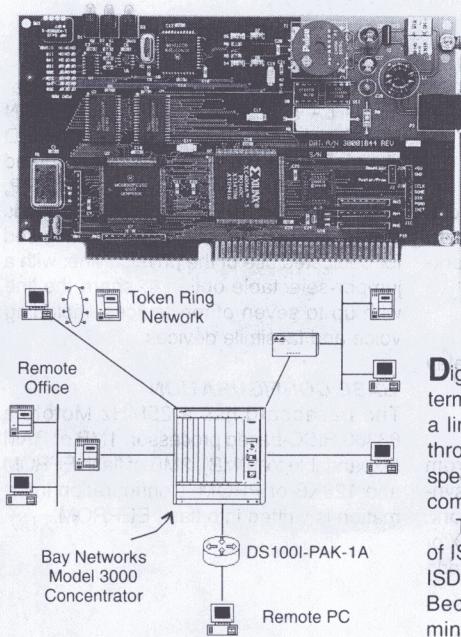
Model 10179 \$ 2220.00
RS422/X.21 ISA T1/E1, with compression

Model 10180 \$ 2415.00
RS232/V.35, MCA, T1/E1, with compression

Model 10181 \$ 2415.00
RS422/X.21, MCA, T1/E1, with compression

DigiBoard® DataFire™ PC ISDN Card

Model 77000314



DigiBoard's DataFire integrates an ISDN terminal adapter/network interface card with a line terminator (NT1) to provide breakthrough simplicity and affordability in high-speed remote LAN connections for individual computer users.

The DataFire installs in an expansion slot of ISA bus PCs and connects directly to an ISDN basic Rate Interface (BRI) phone line. Because there is no need for a line terminator or power supply, installation and maintenance are a snap.

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DOC#: 1239

ORDERING GUIDE

Model 77000314 \$ 595.00
16-bit ISA bus



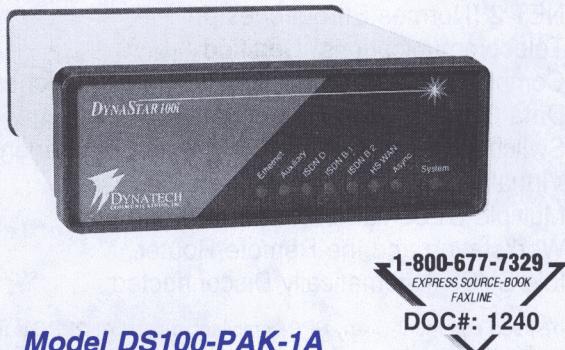
INDUSTRIAL COMPUTER SOURCE

800-459-7442

Dynatech Communications

Remote Access Concentrators

Model DS100I-PAK-1A



DYNASTAR 100I FEATURES

- One ISDN BRI Interface (2 B Channel and 1 D Channel)
- One Ethernet Port
- One High Speed WAN Port (V.35/X.21/RS232)
- One Asynchronous Console Port for Configuration and Diagnostics (RS232)



DYNASTAR 100 FEATURES

- One Ethernet Port
- Two High Speed Wan Ports (V.35/X.21)
- One Synchronous/Asynchronous Port (RS232)
- One Asynchronous Console Port for Configuration and Diagnostics (RS232)

The DynaStar 100 is a multi-tasking, multi-microprocessor platform that provides LAN connectivity over wide area networks (WAN). Its hardware and software modules simultaneously support multiple LAN interfaces, WAN interfaces, and LAN/WAN applications.

The DynaStar 100i adds ISDN capability to the range of functions handled by the DynaStar 100. Six built-in software modules control each of the following applications:

ROUTERS

Provides IP/IPX routing between Ethernet or Token Ring LANs over synchronous point-to-point (PPP) lines, X.25 networks, and frame relay networks.

ETHERNET BRIDGES

As an Ethernet 802.3 bridge, both models provide spanning tree Ethernet-to-Ethernet remote-bridging (IEEE 802.1d) over synchronous point-to-point lines over X.25 or frame relay networks.

X.25 SWITCH AND CONCENTRATOR

Provides an X.25 DTE access line to an X.25 node and an X.25 DCE interface to support X.25 concentration and switching.

X.3, X.28, AND X.29 PAD

Provides X.3, X.28, and X.29 asynchronous PAD service to terminals connected to asynchronous ports and to a LAN workstation using IPX-Out service.

FRAME RELAY ACCESS

Provides an access line to a frame relay node.

ACCESS SERVER

Provides multiple services to and from Ethernet or Token Ring LANs over asynchronous lines or over an X.25 network. Inbound traffic may be asynchronous IPX or IP (SLIP) and Telnet. Outbound LAN workstation traffic is IPX or IP via Telnet.

ISDN

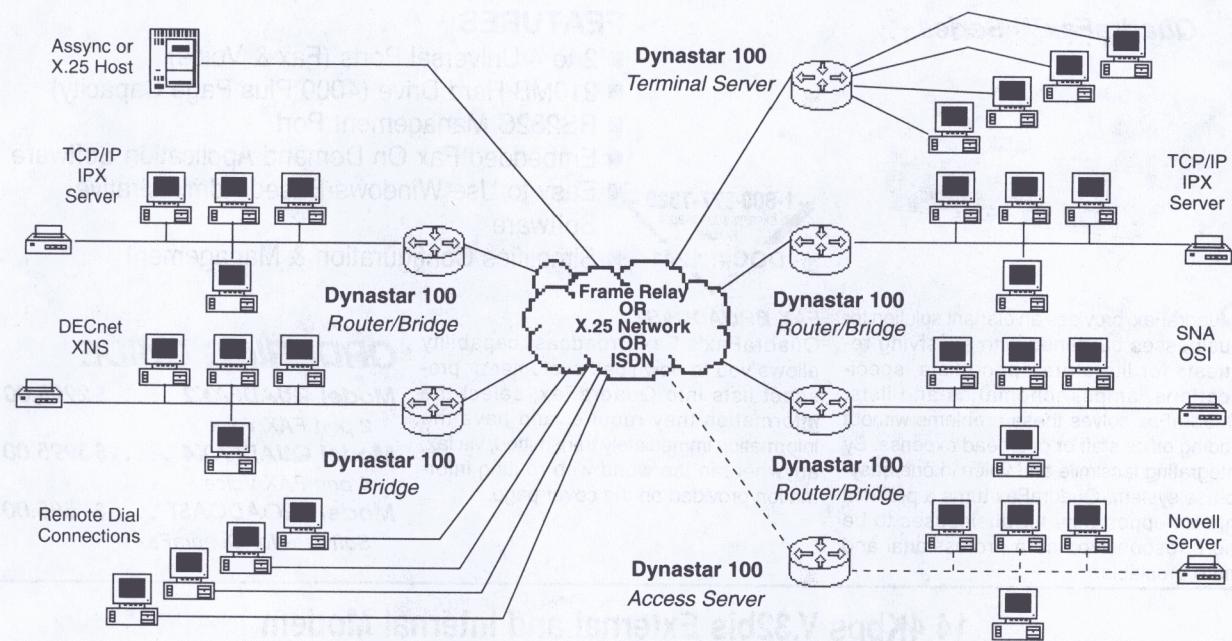
The DynaStar 100i provides "dial on demand" LAN interconnections over an ISDN BRI interface (with 2 B channels or 1 D channel). Each B channel can be configured to support one of three WAN protocols, PPP, X.25, or frame relay, at transmission speeds of up to 64Kbps. The ISDN port is configured for dedicated use of the physical line, with a jumper-selectable option to share the line with up to seven other devices, including voice and facsimile devices.

BASE CONFIGURATION

The baseboard has a 25MHz Motorola 68360 RISC-based processor. 1MB of RAM (expandable to 16MB), 2MB of flash EPROM and 128KB of PROM. Configuration information is written into flash EEPROM.

Dynatech Communications Remote Access Concentrators

REMOTE ACCESS



ORDERING GUIDE

ISDN PORTS

Model DS100I-PAK-1A . \$ 2495.00

1 Ethernet port, 1 Craft port (19.2Kbps), 2 ISDN B-Channels, 1 T1/E1 WAN port (up to 2.048Kbps). Software, IP, IPX, PPP, X.25, FR, Async, cables, and connectors

Model DS100I-PAK-1B . \$ 3490.00

Base+1 Ethernet port, Software, IP, IPX, PPP, X.25, FR, Async, cables, and connectors

Model DS100I-PAK-1C . \$ 3490.00

Base+4 RS232 Sync ports, Software IP, IPX, PPP, X.25, FR, Async, cables, and connectors

Model DS100I-PAK-1D . \$ 3690.00

Base+4 RS232 Sync ports and DS-Quad P, Software IP, IPX, PPP, X.25, FR, Async, cables, and connectors

Model DS100I-PAK-1E . \$ 3990.00

Base+1 Token Ring port, Software IP, IPX, PPP, X.25, FR, Async, cables, and connectors

ETHERNET PORTS

Model DS100-PAK-1A . \$ 2895.00

1 Ethernet port, 1 Craft port (19.2Kbps) 2 T1/E1 WAN ports, 1 Async/Sync port (115Kbps), Software IP, IPX, PPP, X.25, FR, Async, cables, and connectors

Model DS100-PAK-1B . \$ 3890.00

Base+1 Ethernet port, Software IP, IPX, PPP, X.25, FR, Async, cables, and connectors

Model DS100-PAK-1C . \$ 3890.00

Base+8 Async ports, Software IP, IPX, PPP, X.25, FR, Async, cables, and connectors

Model DS100-PAK-1D . \$ 4090.00

Base+4 RS232 Sync ports and DS-Quad-P, Software IP, IPX, PPP, X.25, FR, Async, cables, and connectors

Model DS100-PAK-1E . \$ 4390.00

Base+1 Token Ring port, Software IP, IPX, PPP, X.25, FR, Async, cables, and connectors

UPGRADE KITS FOR DYNASTAR 100I PAK-1A ONLY

Model DS-OCT+ \$ 1240.00

8 Port Async expansion board kit, rear panel

Model DS-ENET \$ 1240.00

1 Port Ethernet expansion board kit

Model DS-TOKEN \$ 1770.00

1 Port Token Ring expansion board kit

Model DS-Q232R \$ 1390.00

RS232 Access Quad Interface module and DS-Quad-P, 4 port expansion board kit

Model DS-Q21/11D \$ 2020.00

X.21/V.11 Access Quad interface module and DS-Quad-P, 4 port expansion board kit

Model DS-ATMDSI. \$ 2495.00

1 Port ATM DSI (1.544Mbps) with integral DSU/CSU expansion port kit. (call for availability)

CONNECTIVITY KITS FOR DYNASTAR 100I

All are male connectors

Model DS-ASYNC-CK \$ 50.00

1 Async RJ45 to DB25, includes RJ-69 cable, 10' and DB25 modular adapter

Model DS-232-CK \$ 50.00

1 Sync includes 1 DB15 to DB25 conversion cable, 10'

Model DS-V35-CK \$ 150.00

1 Sync includes 1 DB15 to 34 pin Winchester conversion cable, 6'

Model DS-V11-CK \$ 50.00

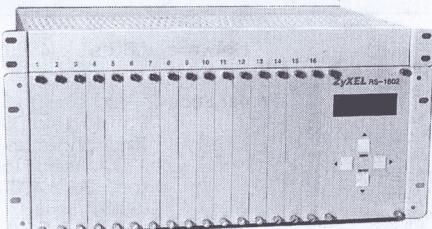
1 Sync includes 1 DB15 to DB9 pin conversion cable, 10'

Model DS-10BASET-CK \$ 50.00

10-BaseT Level 5 RJ-45, 14' cable straight thru



Model RS-1602



1-800-677-7329

EXPRESS SOURCE-BOOK

FAXLINE

DOC#: 1242

FEATURES

- The Rack Holds up to 16 Model 1496R Modems
- Built-in LCD Panel for Control & Monitoring
- Supports 2-wire Dial-up and 2/4-wire Leased Lines
- Optional Network Management System can Control & Monitor up to 255 Racks

CENTRAL CONTROL AND MONITORING

A 4-line by 20-character LCD display menu control panel is on the rack chassis with four directional key pads. Every modem card's settings can be viewed, changed, and saved by the panel operation. Every modem card's operation can also be under panel control. Dialing, going on/off hook, and doing tests all can be initiated from the panel. The panel can also be hooked to any modem card in the rack to monitor the card's receiving line condition. The control card stores every modem card's settings and will automatically configure any newly replaced card to the correct settings.

1496R FAX/MODEM CARD

The 1496R supports 14,400bps CCITT standards of V.32bis and V.33. For lower speeds it also supports V.32, V.29, V.27ter, V.22bis, V.22, V.23, V.21, BELL 212A, and BELL 103 at speeds of 9,600, 7,200, 4,800, 2,400, 1,200, and 300bps. The Model 1496R supports both asynchronous and synchronous operations on 2/4-wire leased or 2-wire dial-up lines. Implementing both V.42bis and MNP-5 data compression protocols, the 1496R's asynchronous communication throughput can reach as high as 76,800 or 57,600bps error free. For fax communication, G3 fax send/receive capability is built-in with Class 2 fax command set implemented. Including the CCITT V.17 fax transmission standard, the 1496R supports fax transmission speed up to 14,400bps. Fifteen LED status indicators on every card's front panel give a complete monitoring of the card's operation.

NETWORK MANAGEMENT SYSTEM

The Network Management System (NMS) is a PC based system. Up to 255 racks can be linked together under one PC station's control and monitoring. NMS is optional and is supported by the control card. The NMS interface is built-in on every rack's back panel.

SPECIFICATIONS

RS-1602 RACK

Capacity	1 to 16 1496R fax/modem cards
Front Panel Control	20 character x 4 line LCD display 4-key menu control Configuration setting and parameter checking Operation control Line condition monitoring
Rear Panel	16, DB25S connectors for DTE connection 16, 8-pole terminal blocks for 2/4-wire leased line or dial-up line 2, RJ11 interface jacks for NMS
Power Supply	110 or 220VAC ±15% 50/60Hz 100watts total load
Dimension	19" x 7" x 12" (483 x 178 x 305mm)

1496R MODEM CARD

Compatibility	V.33, V.32bis, V.32, V.29, V.27ter, V.22bis, V.22, V.23, and V.21/BELL 103
LED Status Indicators	PWR, TST, ERR, TXD, RXD, CD, DTR, DSR, RTS, CTS, OH, HS, AA, SQ, and LL
Manual Switches	Voice/Data toggle and Answer/Originate mode setting
Transmit Level	-9 or -10dBm permissible for dial-up line 0 to -27dBm for leased line
Receive Sensitivity	-43 dBm

Asynchronous Data Format 8, 9, 10, or 11-bit character

Operation Modes Auto-dial/answer
Manual originate/answer

Dialing Type Tone/Pulse dialing

Call Progress Monitoring Dial tone, busy, and ringback detection

Line Status Monitoring Signal-to-noise ratio
Receive signal level
Frequency offset
Phase jitter
Retrain log
Carrier loss log

Error Control MNP4 & V.42

Data Compression MNP5 & V.42bis

Flow Control XON/XOFF or RTS/CTS

Configuration Settings Software or central panel LCD menu programmable
Non-volatile memory storage

Diagnostic Modes Model full self-test
Analog loopback (with self-test)
Remote digital loopback (with self-test)
Digital Loopback

Command Set Extended AT command set

G3 Fax Send and receive V.17 14,400bps transmission rate
EIA Class II fax command set

DTE Interface EIA-232D/V.24
Speed: 300bps to 76.8kbps

ORDERING GUIDE

Model RS-1602 \$ 1249.00

Rack chassis

Model 1496R \$ 729.00

Rackmount modem

Model RS-1602/NMS \$ 765.00

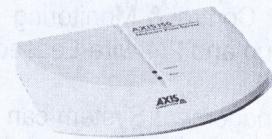
Network management software



Print Servers

for Ethernet & Token Ring

Model AXIS150



ORDERING GUIDE

Model AXIS150 \$ 399.00

Multiprotocol Ethernet print server for Workgroups

2-Port for Workgroups

SPECIFICATIONS

Logical Connections Ethernet Network, running any Combination of Windows 3.x, Windows for Workgroups 3.x, Windows95, Windows NT 3.x, NetWare, LAN Manager, LAN Server. Automatic Sensing of IEEE802.2, IEEE802.3, SNAP and Ethernet II Frame Types.

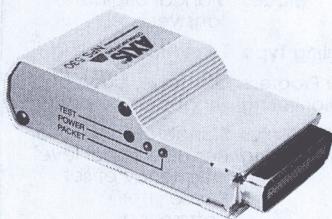
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EXPRESS SOURCE-BOOK
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DOC#: 1243

Network Attachments 10BaseT RJ45 Ethernet

Printer Ports 2 Parallel High Speed Ports, 25 Pin DSUB. Throughput up to 1200kB/sec (150kB/sec), Burst 4000Kbps (500kB/sec)

Hardware 32 bit RISC CPU, 512Kbyte Flash Memory, 128Kbyte RAM Memory

Model NPS530



ORDERING GUIDE

Model NPS530E \$ 395.00

Multiprotocol Ethernet print server, 10BaseT (RJ45)

Model NPS532E \$ 395.00

Multiprotocol Ethernet print server, 10Base2 (BNC)

Model NPS550RISC \$ 595.00

RISC Based, Multiprotocol Ethernet print server, 10Base2 (BNC) and 10BaseT (RJ45). 2 parallel ports, 1 serial port RS232C

Multi-Protocol Ethernet Print Server

SPECIFICATIONS

Network Management SNMP-MIB II Compliant, Private Enterprise MIB Included

Logical Connections Ethernet Network, Running any Combination of TCP/IP, NetWare, Windows NT, LAN Manager, LAN Server and Apple EtherTalk.

Attachments NPS530 10BaseT (Twisted Pair) Ethernet
NPS532 10Base2 (Thin) Ethernet
NPS550RISC Both 10BaseT and 10Base2

Logical Printers A Logical Printer is an Advanced Device Driver Acting in between the Network and the Printer. Axis NPS530/532/550RISC has a set of 8 Fully Programmable Logical Printers

Parallel Printers Centronics Standard IEEE1284 Bidirectional Parallel Port

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DOC#: 1244

† Tech Tip:

The logical printers are useful for running different printer emulations, printing from a multi-host environment and selecting multiple bins/form sizes. The logical printer drivers can be programmed to perform automatic ACII to Postscript conversion, string before or after a job, string substitution and character set conversion

Model NPS650



The NPS650 connects your printers anywhere on a token ring network, allowing all network users access to shared printer resources

ORDERING GUIDE

Model NPS650 \$ 795.00

Multiprotocol Token ring print server

Multi-Protocol Token Ring Print Server

SPECIFICATIONS

Network Management SNMP-MIB II Compliant, Private Enterprise MIB Included

Logical Connections Token Ring Network, Running any Combination of TCP/IP, NetWare, Windows NT, LAN Manager and LAN Server, LLC IEEE802.2, MAC IEEE802.5. Early Token Release Supported for 16Mbps

Attachments Media Type 1/DB9/STP and Type 3/RJ45/UTP. Support for 4 and 16Mbps Networks

Logical Printers Logical Printer Concept gives you a Set of Eight Fully Programmable Logical Printer Drivers that Correspond to Each of the Three Printer Ports Available

Parallel Printers 2 Parallel Ports

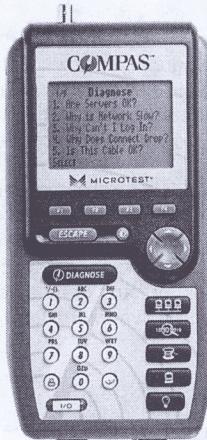
Serial Printer 1 Ser. Port RS232C

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DOC#: 1245

Order Now!

Portable LAN Testers

Model COMPAS



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1246

Microtest®

COMPAS attaches anywhere on your network. It doesn't matter whether it's attached to a files server, workstation or hub-COMPAS identifies the connections, then runs the appropriate tests. There is no time consuming configuration or setup. If the connection changes during a test, COMPAS readjusts and starts the test again.

COMPAS focuses on key problems with your network, eliminating the need to examine the details of every test. Its data sensitive ASSIST explains test results and suggests how to repair your network.

COMPAS's revolutionary NetTap enables you to insert COMPAS between a files server or workstation and the hub. With NetTap, COMPAS can monitor traffic and errors between any network node and the hub.

SPECIFICATIONS

NetWare Frame Types: 802.2, 802.3, Ethernet II, SNAP
Ping: IPX, IP

Connections BNC, IEEE802.3 (Ethernet) Compatible
2 RJ45, 10BaseT (Ethernet) Compatible
Automatic Selection of BNC and RJ45 Connectors
Automatic Configuration of Hub and Workstation Pairs (TX-RX)
NetTap RJ45 Circuitry allows Insertion Between Hub and Station

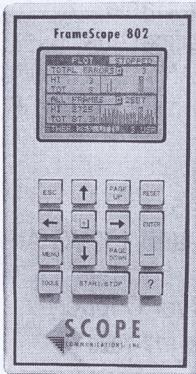
Protocols Recognized IPX, TCP/IP, ARP, XNS, VINES, DECnet, LAT, AppleTalk I and II, ISO

ORDERING GUIDE

Model COMPAS \$ 4995.00

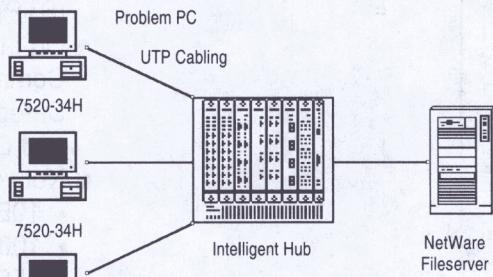
Handheld LAN Tester w/NICAD
battery charger

Model FRAMES-E



1-800-677-7329
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DOC#: 1247

Scope Communications



FRAMES-E quickly determines if the link between the PC and the hub is operational or if there is a physical link problem.

The FRAMES-E addresses the key troubleshooting problems that face LAN managers today. It quickly pinpoints problems, without requiring a protocol analyzer and without wading through lengthy manuals.

Optimized for LAN technical staff on the run and under pressure, the FRAMES-E fits in the palm of your hand, leaving your other hand free to connect and disconnect cables. Battery operated and with a backlit screen, it travels well behind desks and in cramped, dark wiring closets.

The FRAMES-E immediately warns of major link faults between stations, walljacks and hubs. A 10BaseT link fault test is continuously active anytime FRAMES-E is attached to the network, instantly generating an alert when there is a problem with the physical link.

In token ring environments, FRAMES-E can detect weak signal conditions, beaconing rings and error domains, as well as perform lobe integrity and jitter tolerance tests.

TESTERS

ORDERING GUIDE

Model FRAMES-E \$ 3750.00

For Ethernet **ONLY**

Model FRAMES-TR \$ 3750.00

For Token Ring **ONLY**, (4/16Mbps)

Model FRAMES-ETR \$ 4750.00

For **BOTH** Ethernet and Token Ring, (4/16Mbps)

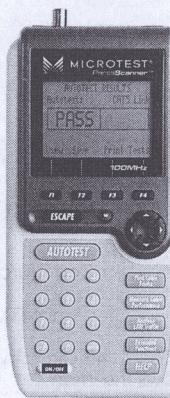


INDUSTRIAL COMPUTER SOURCE

800-459-7442

100MHz, Category 5 Cable Testers

Model PENTA



Call for more information on
Optional Kits and Pricing

Microtest®

PentaScanner™'s Autotest performs a full suite of tests, compares the results to EIA 568A, ISO 11801 and Network Standards, then provides a pass/fail indication for the network category chosen. PentaScanner's one-step Autotest tests all 6 pair combinations to 100MHz and measures Near-End Crosstalk (NEXT), attenuation, resistance, impedance, length and capacitance.

PentaScanner graphically displays the wire map, so you can see the actual pin-outs of your cabling, and includes on-line help to provide instant answers. PentaScanner

allows you to program your own test limits and customize your Autotests. In addition, it also prints complete, easy-to-read certification reports, so you can guarantee your work.

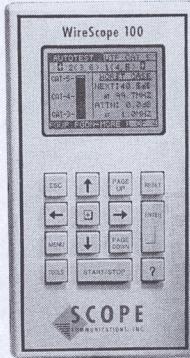
PentaScanner's easy-to-read, backlit, graphical display shows you exactly where wiring errors are so you can go directly to the source and make the necessary corrections. It also monitors and graphs network traffic to help you solve intermittent cable problems.

ORDERING GUIDE

Model PENTA \$4595.00
W/2-way injector

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1248

Model SCOPE100



WireScope™ 100 instantly and accurately qualifies cables against more than 20 cabling and networking standards including TIA-568 (Telecommunications Industries Association) and ISO 11801 (International Standards Organization). At a touch of a button, AUTOTEST performs all measurements on all pairs in the cable. It sweeps all pair combinations, measuring the TIA and ISO parameters with high accuracy and sensitivity.

AUTOTEST shows you which out of 20 standard LANs the cable can support and then summarizes all important measurements-length, ambient noise, NEXT, attenuation and attenuation to crosstalk ratio (ACR).

Scope Communications

FEATURES

- Supports 100Ohm Unshielded Twisted Pair (UTP); 100, 120, 150Ohm Shielded Twisted Pair (STP); 50 and 75Ohm Coaxial Cable.
- On-Line Databases with Specifications of Common Cables, Standard LANs, all TIA-568 Category 3, 4 and 5 Limits, and ISO 11801 B, C and D Limits
- Networks Supported Included
 - 10BaseT, 10Base2, 10Base5
 - 100 Base T4, 100 Base TX and 100VG AnyLAN
 - 155, 51 and 25Mbps ATM
 - 100Mbps TP-PDM (FDDI Over Copper)
 - ISDN

DELAY TESTS COVER NEW HIGH SPEED LANs

All three of the new 100Mbps IEEE standards (100VG-AnyLAN, 100BaseTx and 100BaseT4) require cabling runs (Cat 3 or 5) to perform within new propagation delay or delay skew limits. Propagation delay skew is the difference between the propagation delays of fastest and slowest pairs in any four pair cable. Compliance of these limits is required due to the more advanced transmission techniques used in these new standards.

The WireScope 100 is the first cable analyzer that measures and reports propagation delay for all four cable pairs and automatically calculates the delay skew between pairs so you can easily compare your cable against the new IEEE limits.

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1249

ORDERING GUIDE

Model SCOPE100 \$3995.00
With dual remote

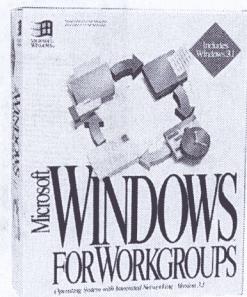
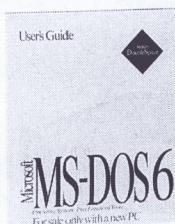
Call for more information on
Optional Kits and Pricing

Novell®, Windows®, DOS® & Artisoft®

**Microsoft Operating Systems sold
as part of a Complete System ONLY!**

DISK OPERATING SYSTEMS

Model MSDOS-6.2/35.....	\$ 95.00
MSDOS 6.2x, 3.5", Single License	
Model DOSWINWG/35.....	\$ 149.00
MSDOS 6.2x and Windows For Workgroups 3.11, 3.5" Disks, Single License	
Model OS/2-3.0/CD.....	\$ 129.00
OS/2, WARP, CD-ROM, Single License	
Model OS/2-3.0/35.....	\$ 129.00
OS/2, WARP, 3.5", Single License	



NETWORK OPERATING SYSTEMS

WINDOWS

Model WINWG311/35.....	\$ 119.00
Windows for Workgroups 3.11, Single User, 3.5" Disks	
Model WINNT35W.....	\$ 369.00
Windows NT 3.5, Workstation, CD-ROM	
Model WINNT35W/35.....	\$ 369.00
Windows NT 3.5, Workstation, 3.5" Disks	
Model WINNT35WMLP.....	\$ 319.00
Additional License Permits Making One Copy of Workstation, No Media	
Model WINNT35WMMLP.....	\$ 5779.00
Additional 20 License Pack for Copies of Workstation, No Media	
Model WINNT35S.....	\$ 799.00
Windows NT 3.5, Server, CD-ROM	
Model WINNT35C.....	\$ 45.00
Windows NT 3.5, Single Client License. Required for a Node to access a Windows NT 3.5 Server	
Model WINNT35C20.....	\$ 669.00
Windows NT 3.5, 20 Client License Pack.	

LANTASTIC

Model LANT50W.....	\$ 139.00
Lantastic Single License v5.0 for DOS/Windows	
Model LANT506W.....	\$ 779.00
Lantastic 6 License Pack, V5.0 for DOS/Windows	
Model LANT5012W.....	\$ 1429.00
Lantastic 12 License Pack, V5.0 for DOS/Windows	

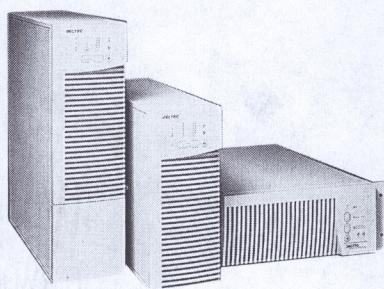
NOVELL NETWARE V3.12

Model NTWR3125/35.....	\$ 1095.00
5 User Netware 3.12, 3.5" Disks	
Model NTWR3125/CD.....	\$ 1095.00
5 User Netware 3.12, CD-ROM	
Model NTWR31210/35.....	\$ 2495.00
10 User Netware 3.12, 3.5" Disks	
Model NTWR31210/CD.....	\$ 2495.00
10 User Netware 3.12, CD-ROM	
Model NTWR31225/35.....	\$ 3695.00
25 User Netware 3.12, 3.5 Disks	
Model NTWR31225/CD.....	\$ 3695.00
25 User Netware 3.12, CD-ROM	
NOVELL NETWARE V4.01	
Model NTWR41-5.....	\$ 1095.00
5 User Netware 4.1, CD-ROM	
Model NTWR41-10.....	\$ 2495.00
10 User Netware 4.1, CD-ROM	
Model NTWR41-25.....	\$ 3695.00
25 User Netware 4.1, CD-ROM	

Other configurations and user packages, for Netware and Lantastic are available on request. Call for current pricing and model numbers.



Deltec Uninterruptible Power Systems



The PowerWorks RS series Uninterruptible Power System is designed for mid-sized computer networks and other sensitive electronic equipment. The RS series provides quality power protection in a range from 2.1 to 6KVA and in stand alone as well as rack mounted configurations. Using Dual

Conversion On-line Technology, the RS Series is a true on-line UPS that delivers excellent voltage regulation, bidirectional filtering and extremely low input current distortion. Further, the RS Series assures quiet operation along with powerful performance.

On-Line

FEATURES

- Advanced Battery Management
- Dual Conversion On-Line Technology
- Static Bypass Switch Standard
- Power Isolation
- Remote Emergency Power Off
- UPS Code II Compliant

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1210

ORDERING GUIDE

Model RST21NET \$ 2650.00

2.1KVA, 120/120VAC In/Out, 125lbs

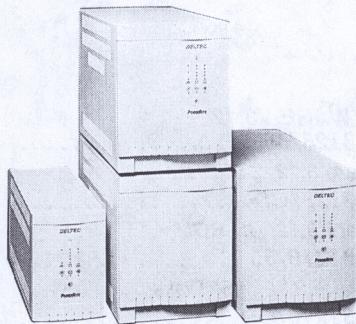
Model RST31NET \$ 3020.00

3.1KVA, 120/120VAC In/Out, 135lbs

RACK MOUNT MODELS

(Rack Mount Chassis Include Rack Mounting Ears)

Line Interactive



The PowerRite Pro UPS is compact, quiet, easy to install and operate. Advanced Battery Management (ABM) prolongs battery life, speeds recharge and also gives you up to 60 days warning prior to the end of useful battery life! The PowerRite Pro UPS includes an RS232 port which allows the unit to report its operational status to a host computer.

FEATURES

- Line Interactive Power Back Up
- Advanced Battery Management
- Communications Capabilities and Power Monitoring
- Quiet Full System Back Up
- 96% On Line Efficiency
- 1000 to 2500VA Models
- Rack Mount or Floor Mount

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1211

ORDERING GUIDE

Model PRA1000 \$ 699.00

1000VA, 7-10Min Backup, 120/120VAC In/Out, 57lbs

Model PRA1500 \$ 879.00

1440VA, 7-10Min Backup, 120/120VAC In/Out, 57lbs

Model PRA2000 \$ 1499.00

1920VA, 7-10Min Backup, 120/120VAC In/Out, 96lbs†

Model PRA2200 \$ 1599.00

2200VA, 7-10Min Backup, 120/120VAC In/Out, 96lbs†

† Includes additional battery box. Weight 65lbs.

Power Monitor Software for UPS

UPS

LanSafe III and FailSafe III software provide two methods for monitoring the performance and availability of your system's backup power. Both packages are fully operational with either the Deltec On-line or Line Interactive UPS systems. LanSafe III is

designed for network operations while FailSafe III provides similar power management capabilities for stand-alone PCs.

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1213

FEATURES

- Stand-alone and LAN/WAN Packages
- UPS Code II Compliant
- Monitor One or All UPS on Net
- Most NOS supported

ORDERING GUIDE

Model LS3OS2 \$ 99.00

Network Monitoring for OS/2 V2.0, 2.1, LAN Manager and LAN Server Required

Model LS3NDW \$ 99.00

Network Monitoring for Novell NetWare 2.15-4.02, DOS 3.3-6.2, and Windows 3.0-3.11

Model LS3NT \$ 99.00

Network Monitoring for Windows NT 3.1-3.5

Model FS3OS2 \$ 89.00

Stand-alone Power Monitor for OS/2 2.0-2.1, 3.5" Disks

Model FS3WIN \$ 69.00

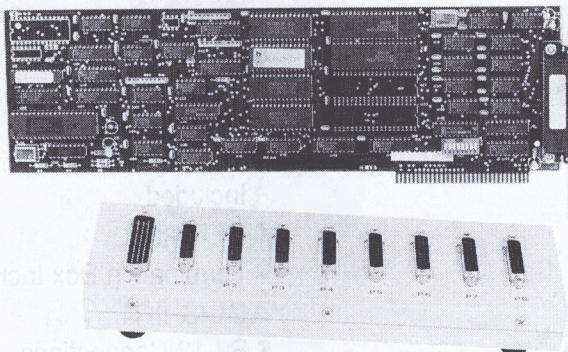
Stand-alone Power Monitor for MS-DOS 3.3-6.2, Windows 3.0-3.11

Model FS3NT \$ 89.00

Stand-alone Power Monitor for Windows NT 3.1-3.5

4/8 Port Adapter with Co-Processor

Model ACL-4



FEATURES

- 4 or 8 Ports
- RS232/RS422/RS485
- On-Board 8 Mhz 8088
- 32K or Program Memory
- 16K of EPROM Space
- 64K of Dual-Port RAM
- DOS & Windows Drivers Included

The ACL (Advanced Communications Link) is an intelligent communications server with its own on-board processor and memory. The ACL occupies a single slot in a PC/XT/AT or compatible computer and is provided with an external termination panel for connecting the communication lines. The ACL-4 and ACL-8 provide 4 and 8 RS232 ports respectively. RS422 communications are optionally available with an alternate termination panel.

PROCESSOR

The ACL provides an on-board 8088 processor operating at 8Mhz, 32Kbytes of scratch-pad RAM as well as 16K of EPROM space is provided for the communications program. An additional 64K bytes of dual-port RAM is provided for buffering incoming and outgoing data. A memory arbitration scheme is provided allowing both the PC and the ACL to access the dual-port RAM without contention.

DRIVERS

The ACL is not mapped as a DOS COM port allowing COM1 and COM2 ports to reside in the system with the ACL boards. A DOS driver is provided on disk which configures the ACL for use as a buffered interface. The 64K of dual-port RAM can be allocated in user defined sizes to buffer each of the communications ports. Pointers are maintained indicating beginning and end of each buffer as well as the next location to read from or write to.

A Windows driver is also provided, but it will only support one 8-channel card because of Windows limitations.

SPECIFICATIONS

ACL-4, ACL-8

No. of
Channels

Interface
Control Lines

RTS, CTS, DTR, DSR, DCD,
RI per EIA RS232-C-DTE
configuration (RS-422
option available)

Communications Speed

50 to 38.4K baud,
programmable

I/O Channel
Address

4 settings via DIP switch

Interrupts

1 of 6 levels via DIP
switch

Number of
Boards per
System

4 boards, 32 ports max.

Interrupt
Sources

Transmit Register Empty
Received Data Available
Receiver Line Status
Modem Status

On-Board
Micro-
processor

8088 with 32K RAM
16K EROM
64K Dual Port Data RAM

Memory Map
Locations

A0000, C0000, D0000,
E0000

ACL-8-MC

Number of
Channels

Interface
Control Lines

DTR, RTS, CTS

Communications Speed

75 to 38.4K baud,
programmable

I/O Channel
Address

Installation File,
P.O.S. (@67E1.ADF)
Microchannel Bus

Interrupts

1 of 8 levels or disable
P.O.S.

Memory Map
Location

8K Bytes boundary,
P.O.S.

Power
Requirements

+5VDC @ 1.37A
+12VDC @ 0.043A
-12VDC @ 0.043A

ORDERING GUIDE

Model ACL-4 \$ 910.00

Model ACL-8 \$ 1135.00

Includes ACL board with RS232
termination, documentation, DOS &
Windows drivers.

Model ACL-4-422 \$ 1010.00

Model ACL-8-422 \$ 1235.00

Includes ACL Board with RS422
termination, documentation, DOS &
Windows drivers.

AVAILABLE DRIVERS

ONE additional driver available at NO
charge

Model QNX/DRV..... \$ NC

Model SCOXENIX/DRV \$ NC

Model UNIX/DRV \$ NC

Model SCOUNIX/DRV . \$ NC

Model OS2/DRV \$ NC

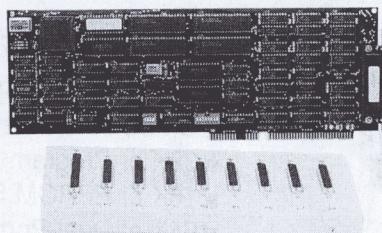
Model UNIX-SVR4/DRV \$ NC

Model 32BIT-OS2/DRV . \$ NC

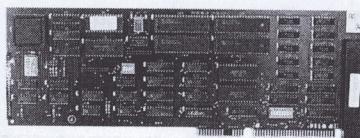


8-Port Adapter with Co-Processors

Model ACL-8-II+



Model ACL-8-IIR+



The ACL-8-II+ and ACL-8-IIR+ provide eight ports of full RS232 communications on a single "intelligent" board. The on-board 80188 microprocessor, operating at 16 Mhz, has the power and speed to handle demanding multi-user communications systems interfacing with 64K of Dual-port RAM. The number of ACL-8-II(R)+'s in a system is limited only by the number of suitable 16-bit expansion slots and power supply capacity.

The ACL-8-II(R)+ can be downloaded with your own application program to run concurrently with your main application program running on your AT or compatible system. You may even create your own operating system and download to the ACL-8-II(R)+'s. The typical bottleneck of communications seen when a single CPU tries to do everything is easily avoided through the use of this board. System throughput

speeds have been enhanced by the use of 26C92 DUARTS. These chips add 8 character transmit and receive FIFO buffers to each port. Simultaneous channel throughput speeds greater than 23K baud are achievable in most systems. Several major operating systems are supported. Diagnostic and sample software is included to help in developing your applications under DOS.

System cabling is simplified by including termination panels for the ACL-8-II+ or the RJ-12 jacks on the rear of the ACL-8-IIR+.

The ACL-8-II(R)+ supports MS-DOS (3.0 and greater), PCMOS/386, Unix and Xenix. System requirements include an IBM-AT or 100% compatible system. A full length 16-bit expansion slot is required for each ACL-8-II in the system. An instructional manual and a setup diskette is included with each board.

FEATURES

- 8 Ports
- 16 Mhz 80188 CPU On-Board
- Up to 4 Boards Per System
- Handshaking Supported
- 50 to 115K Baud
- DOS & Windows Driver Included

ACL-8-II+

- Termination Box Included

ACL-8-IIR+

- RJ-12 Connections

SPECIFICATIONS

Number of Channels 8 maximum

Interface Format Serial with control lines: all ports asynchronous

Communications 50 to 115,200 baud selectable under program control

Software Program Choices Parity: Even, odd, mark, space or none Character length: 5, 6, 7, or 8 bits Stop bit length: 1 or 2 bits

I/O Connectors 8 RJ12 connectors (-IIR+) 8 DB25, female, remote panel (-II+)

I/O Address 2 locations per setting 4 settings per board

Operating Temp. 0 to 55°C

Storage Temp. -10 to 70°C

Relative Humidity 10 to 90%, RHNC

ORDERING GUIDE

Model ACL-8-II+ \$ 1195.00

Eight Port Card, Termination Block with DB25 connectors, DOS & Windows Drivers

Model ACL-8-IIR+ \$ 795.00

Eight Port Card, Termination Block with RJ-12 connectors, DOS & Windows Drivers

Model ACL-8-II+422 . . . \$ 1355.00

Eight Port Card, Termination Block with DB25 connector and RS422, DOS & Windows Drivers Optional RJ12 to DB25 (Call for Models)

DATA COMM. CONNECTORS

Model DCECONF \$ 19.00

Model DCECONN \$ 19.00

25-pin connectors used by most printers

DATA TERMINAL CONNECTORS

Model DTECONF \$ 19.00

Model DTECONN \$ 19.00

25-pin connectors used by most printers

DATA MODEM CONNECTORS

Model DTEMODM \$ 19.00

Model DTEMODF \$ 19.00

25-pin connectors used by most modems

AVAILABLE DRIVERS

ONE additional driver available at NO charge

Model QNX/DRV \$ NC

Model SCOXENIX/DRV \$ NC

Model UNIX/DRV \$ NC

Model SCOUNIX/DRV . \$ NC

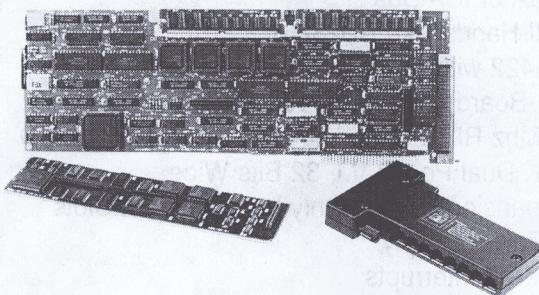
Model OS2/DRV \$ NC

Model UNIX-SVR4/DRV \$ NC

Model 32BIT-OS2/DRV . \$ NC

16-Port Adapter with Co-Processor

Model ACL-16-PH+



The Model ACL-16-(xx)+ expansion board provides optimum speed and system response on all 16 ports, all from a single expansion slot.

DUAL MICROPROCESSORS

The first 16-port board with two on-board 16Mhz 80C186 microprocessors, the Model ACL-16-(xx)+ offers twice the processing power of other 16 port boards. Plus each microprocessors is supported by 64KB scratch RAM and 16KB dual ported RAM.

You can maximize your systems communications capacity with the ACL-16-(xx)+. Add more users, reduce your costs per port and save on slots too. The dual microprocessors off-load the host CPU of many housekeeping and communications chores,

freeing it to focus on the user application. Each on-board processor has its own dual port memory bank.

By storing data in dual port memory, the host can transmit and receive data more efficiently. The overall system runs more smoothly and multiuser terminals enjoy faster response times.

System throughput speeds have been enhanced by the use of 26C92 DUARTS. These chips add 8 character transmit and receive buffers to each port. Simultaneous channel throughput speeds of greater than 23K baud are achievable in most systems.

System performance is further enhanced by 64KB scratch RAM for each microprocessors, double the buffer of other 16 port boards. Besides improving the system's

FEATURES

- 16 Channels RS232 or RS422
- 2 On-Board 80C186's @ 16Mhz
- Up to 4 Boards per System
- Up to 115K Baud
- Up to 24K Baud Simultaneous Throughput

ACL-16-PH+

- RJ-12 Plug 6-Wire Cabling

ACL-16-FH+

- DB-25 Connectors

data transfer capabilities, scratch RAM enables users to modify or replace on-board software with custom I/O programs.

FLEXIBLE CONNECTIONS

Partial handshake control functions are available on the RJ12 phone jack type, 6 wire connections. The "clamshell" connector block attaches to the rear of the ACL-16-PH+ and provides sockets for 16 RJ12 connector plugs to simplify system wiring.

Full handshake control functions are available on a pair of terminal boxes with eight DB-25 connectors each. The terminal boxes connect to the ACL-16-FH+ via a "Y" cable.

SPECIFICATIONS

No. of Channels	16 maximum
Interface Format	Serial EIA-232 DTE configuration with no-handshake and full-handshake options
Communications	50 to 115,200 baud selectable under program control
Software Program Choices	Parity: Even, odd, mark, space or none Character length: 5, 6, 7, or 8 bits Stop bit length: 1 or 2 bits
Microprocessors	80C186 (2) @ 16Mhz

Architecture	16-bit AT
Scratch RAM	Two 64KB
Dual Port RAM	Two 16KB
DUARTS	Eight dual 26C92
Interrupts	3, 4, 5, 10, 11, 12, 15
I/O Channel Address	Choices: 200-203H, 300-303H, 600-603H, or 700-703H
Memory Mapped	Yes, selectable
Handshake (-PH+)	DCD, CTS, RTS;
Handshake (-FH+)	RTS, CTS, DTR, DSR, DCD RI (DTE configuration)
Handshake	NONE

I/O Connectors	-PH+: 6-wire RJ-12 -FH+: 25-pin D-connector (Two 8-connector panels attached by "Y"-cable) -422+: 9-pin D-connector
Power Requirements	+5VDC @ 2A +12VDC @ 130mA -12VDC @ 130mA
Operating Temp.	0 to 55°C
Storage Temp.	-10 to 70°C
Relative Humidity	10 to 90%, RHNC

ORDERING GUIDE

Model ACL-16-PH+ \$ 1495.00

Model ACL-16-FH+ \$ 1995.00

Model ACL-16-422+ \$ 2315.00

Windows Driver will only
Support 8 ports.

AVAILABLE DRIVERS

ONE additional driver available at NO charge

Model QNX/DRV \$ NC

Model SCOENIX/DRV \$ NC

Model UNIX/DRV \$ NC

Model SCOUNIX/DRV \$ NC

Model OS2/DRV \$ NC

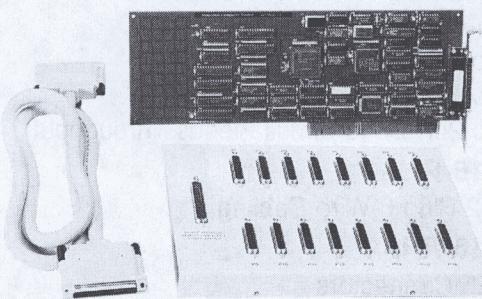
Model UNIX-SVR4/DRV \$ NC

Model 32BIT-OS2/DRV \$ NC



Intelligent ISA/EISA Adapter Card

Model AV100E



The AV100 Series adapters are intelligent expansion boards that adds serial ports to ISA and EISA Bus computers. The AV100 enables a computer equipped with a multi-user operating system to become a host PC in a multi-user system. The adapter relieves the PC of communication responsibilities while supporting up to sixteen serial devices. These include terminals, printers, plotters, video displays, modems, other computers, and many other serial input/output devices (per EIA-232). There is also an eight channel version. The number of Avanstar boards that can be used in a host PC is limited only by the operating system and the availability of EISA slots.

To control wiring clutter and simplify connections, the serial ports are located on an input/output remote panel. An interface cable is supplied to connect the board to the I/O remote panel. This panel serves as a junction box. It contains the receptacle for connection to the adapter board. There are sixteen serial device connectors which comply with the standard EIA-232 DTE configuration. On the RS422 version, each channel is programmable for either RS422 or RS232.

The AV100 is designed for maximum application flexibility with minimum effort. Configuration of the PC for operation with the adapter is done with the help of the EISA configuration utility diskette and the AV100 configuration diskette. This software allows you to assign the dual port boundary addresses anywhere in the first megabyte of

the system address space on any 32k byte (8000hex) boundary. You can also select interrupt-driven operation using any one of the eight interrupt request levels provided by the adapter or, it allows you to disable interrupt-driven operation.

CPU

The on-board CPU is a 16Mhz 80C186. Its main task is to service the UARTs. Also, the CPU reads and processes commands and data from the dual port memory that originate from the application program. This operation minimizes the overhead associated with moving data between the application program and the peripheral.

Communications between the AV100 adapter and peripheral devices is handled by a UART device. The AV100 contains four RISC-based CD1400 quad UARTs.

For each channel, the specifications for operating mode, data format, baud rate, and protocol are completely under program control. Each channel contains a 12-byte transmit and a 12-byte receive FIFO to further enhance system throughput.

DUAL PORT RAM

The AV100 adapter communicates with the host via dual port memory. Dual port memory, which consists of 32k bytes of RAM, is a hardware configuration which allows two processors to share the same physical memory. This is an efficient means of communicating data or commands between the CPU on the AV100 adapter and the CPU in the host. All accesses to the dual port by both the host PC and the AV100's

ORDERING GUIDE

Model AV100E \$ 1695.00

EISA 16-port Card, manual, junction box, cable, software

Model AV100E-422 \$ 1995.00

EISA 16-port Card, 232/422, manual, junction box, cable, software

Model AV100E/8 \$ 1295.00

EISA 8-port Card, manual, junction box, cable, software

Model AV100E/8-422 \$ 1595.00

EISA 8-port Card, 232/422, manual, junction box, cable, software

FEATURES

- 16 Asynchronous Serial Ports for EISA or ISA Bus
- Full Handshake RS232 or RS422 with Surge Suppression
- On-Board 16Mhz 80C186 Microprocessor
- 20Mhz RISC-Based UARTs with Internal FIFO
- 32K Dual Port RAM, 32 Bits Wide
- Expansion Limited Only by Number of Slots & Power Supply
- Shared Interrupts

CPU are 32-bit wide transfers. This permits faster movement of data to and from the dual port memory.

Because both CPUs cannot access this memory at the same time, an arbiter circuit is put between the memory and the CPUs. The arbiter determines which CPU may gain access to the dual port memory.

SPECIFICATIONS

No. of Channels	16
Interface Format	Asynchronous
Protocol	EIA-232
Handshake Lines	RTS, CTS, DSR, DCD, DTR
Parity	Even, odd, mark, space, or none
Character Length	5, 6, 7, or 8 bits
Stop Bit Length	1 or 2 bits
Baud Rate	50 to 115.2k baud per channel
Interrupts	3, 4, 5, 9, 10, 11, 12, 15, or none
Power Requirements	+5V @ 2A +12V @ 0.0768A -12V @ 0.0384A
Operating Temp	0 to 55°C
Storage Temp	-10 to 70°C

ADDITIONAL DRIVERS

ONE additional driver available at NO extra charge

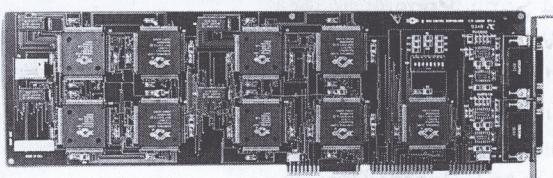
Model SCOUNIX/DRV . . . \$ NC

Model UNIX-SVR4/DRV . . . \$ NC

Model AV32BIT-OS2/DRV \$ NC

Multiport Adapters

Model ROCKETPORT32



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1100

The ROCKETPORT multiport serial controller series fits a 16-bit ISA slot of a PC compatible computer. Four base versions are available in 4, 8, 16, or 32 ports. Further, two connector versions are offered. There is a 4 and 8 port version with RJ45 (4 port) or RJ11 (8 port). There are also 4, 8, 16, and 32 port versions with external junction panels with DB25 female connectors. One version of this panel is just RS232 while another is switch selectable between RS232 and RS422.

ORDERING GUIDE

Model ROCKETPORT4J . \$ 299.00

Board, manual, software

Model ROCKETPORT8J . \$ 399.00

Board, manual, software

Model ROCKETPORT4 . \$ 359.00

Board, manual, software

Model ROCKETPORT8 . \$ 379.00

Board, manual, software

Model ROCKETPORT16 . \$ 629.00

Board, manual, software

Model ROCKETPORT32 . \$ 1099.00

Board, manual, software (Requires two 16 port interface panels)

DRIVER SUPPORT

The RocketPort card come supplied with both DOS and Windows drivers, as well as SCO UNIX drivers. Using DOS, support for up to 128 ports is provided. Using Windows, you have support for up to 96 ports. That's three RocketPort cards running under Windows!

Other drivers available include the following: OS/2, QNX (4.11 & 4.2), SCO XENIX (SRV 3.2v2.3.4), Solaris, SVR3.2 UNIX (3.2v3 & 3.2v4), SVR4 UNIX (SRV4.2 & Unixware 1.0), and Windows NT (3.1).

INTERFACE PANELS

(All have DB-25 female connectors)

Model RPI4-232..... \$ 149.00

Panel, cable

Model RPI4-232/422... \$ 185.00

Panel, cable

Model RPI8-232..... \$ 299.00

Panel, cable

Model RPI8-232/422... \$ 329.00

Panel, cable

Model RPI16-232..... \$ 399.00

Panel, cable

Model RPI16-232/422.. \$ 459.00

Panel, cable

FEATURES

- Throughput up to 230.4 Kbps SIMULTANEOUSLY (RS422 Mode)
- 4, 8, 16, & 32 Port Models
- On-Board 36 Mhz Processor for Each 8 Ports
- I/O Mapped Like a Non-Intelligent Card for Easy Installation
- Install up to 4 Boards in One System for a Maximum of 128 Ports
- Supplied with DOS & Windows Drivers

SPECIFICATIONS

Ports 4, 8, 16, or 32

Number of Cards per System 4 max

Interface RS232
(Optional RS422, non "J" version)

Interrupt None, 3-5, 9-12, & 15

Data Bits 7/8

Stop Bits 1/2

Baud Rate RS232: 50-115.2Kb
RS422: 50-230.4Kb

POWER REQUIREMENTS

	+5 VDC	+12VDC	-12VDC
4J	300mA	35mA	40mA
8J	300mA	45mA	50mA
8	700mA	65mA	80mA
16	950mA	130mA	150mA
32	1.9A	240mA	270mA

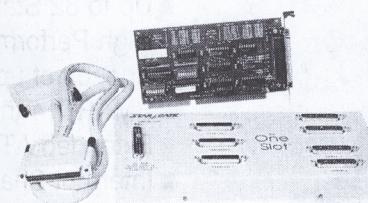
Temperature Operating: 0 to 70°C
Storage: -65 to 150°C

Relative Humidity 8 to 80% RHNC

MTBF	4J	41 years
	8J	36 years
	8	51 years
	16	39 years
	32	25 years

Serial Parallel Multiport Board

Model ONE-SLOT



Now a single PC expansion slot can support up to 7 peripheral devices, including laser printers, dot matrix printers, mice, bar code readers, plotters and modems. The Model ONE-SLOT Combination Multiport Board supplies 4 serial (COM 1 - COM 4) and 3 parallel ports (LPT 1 - LPT 3) in one low-cost, easy to install unit. Delivering full duplex communications with complete handshake control on all serial ports and bidirectional Centronics on all parallel ports, the ONE-SLOT supports a multitude of PC expansion applications for single-user, multi-user and networking installations.

ORDERING GUIDE

Model ONE-SLOT \$ 249.00

Board, manual, remote panel, cable

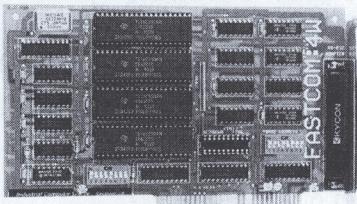
FEATURES

- Supports Windows, Multimedia, OS/2, Novell and DOS Environments
- Fully Shielded Remote Panel & Cables
- 4 EIA-232E Serial Ports with Full Handshake Control
- Baud Rates of 50 to 115K Programmable
- 3 Centronics Parallel Ports



Adapters

Model FASTCOM4



4-Port Windows Compatible

FEATURES

- 4 Serial Ports
- Windows 3.1 Compatible PAL Included
- 16C550 Uarts
- True COM1 thru COM4 Compatibility in Windows Mode
- Up to 5 Boards/System
- 8 or 16-Bit Bus
- Driver/Buffer Software Included

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1038

SPECIFICATIONS

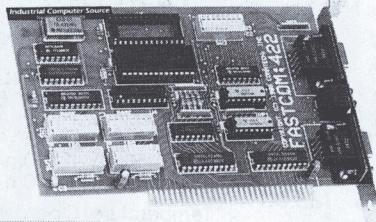
Ports	4, RS232
I/O Address Requirements	32 Bytes-selectable
UARTS	T16C550
Interrupt	Selectable 1 of 6 (2-7)
Baud Rates	50-256k (above 56k requires crystal change, customer supplied)

Connectors	DB37, female on card 4 each, DB25, male on cable end
Software	SMART14 Communication Utility
Power Consumption (typical)	5V @ 400mA ±2V @ 50mA each

ORDERING GUIDE

Model FASTCOM4W . . .	\$ 395.00
RS232, 4-port card, SMART14, Windows PAL, cable and manual	
Model FASTCOM4.	\$ 395.00
82510 version (Not Windows Compatible)	

Model FASTCOM/422



FEATURES

- 1 or 2 Serial Com Ports
- RS422/RS485
- Up to 288K Baud
- Selectable I/O Address
- 4 Byte Receive/Transmit Buffers
- Driver/Buffer Software Included
- HICOM/9 Compatible

SPECIFICATIONS

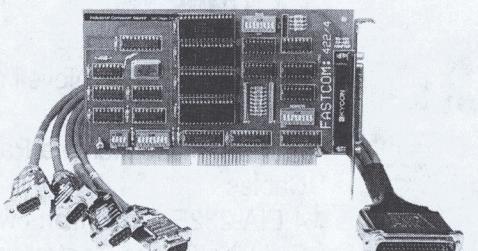
Ports	1 standard (2- /SER option)
I/O Address Requirement	8 I/O Bytes
I/O Base Address	Selectable per port
UART	82510 (2nd 82510-/SER option)

Baud Rates	50-288K baud
Interrupt Connectors	1 of 6, per port (2-7), 1 DB9, male (2nd DB9, male-/SER option)
Software	SMART14 Communication Utility

ORDERING GUIDE

Model FASTCOM/422. . .	\$ 195.00
RS422 port, SMART14 software, manual	
Model FASTCOM/SER. . .	\$ 49.00
Second RS422 UART and driver chips for FASTCOM/422	

Model FASTCOM422/4



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1037

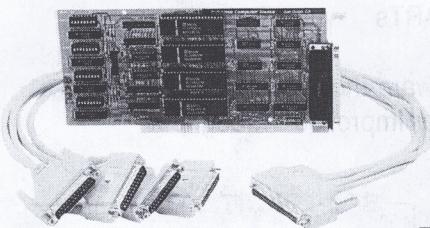
FEATURES

- 4 Independent RS422/485 Channels
- Up to 32 Stations (RS485 mode)
- High Performance 82510 UARTs
- Speeds of up to 288k Baud
- SMART14 Included
- Extended AT Interrupts
- Interrupt Sharing
- HICOM/9 Compatible

ORDERING GUIDE

Model FASTCOM422/4.	\$ 450.00
Board, manual, SMART14 software, cable	

Model WINCOMM4



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1070

The WINCOMM4 provides 4 additional serial ports for terminals, modems, printers, etc. The WINCOMM4 will function in either a DOS or Windows environment. The card can be configured as COM1: through COM4:

or any other I/O address (up to 3FFH), providing a low cost means of expanding the number of serial ports on your PC. The WINCOMM4 utilizes the 16550 UART.

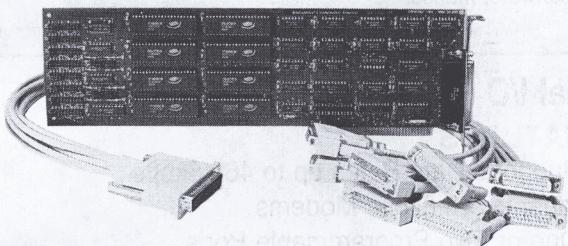
FEATURES

- 4 RS232 Ports with All Modem Control Signals
- Individually Selectable Port Addresses
- Individually Selectable, Extended AT Interrupts
- Each Port is Individually Addressable as COM1: Through COM4: or Any Other I/O Address up to 3FF Hex
- Multiple Cards can Share the Same IRQ Signal
- Comes Standard with 16550 UARTs
- Windows 3.1 Compatible

ORDERING GUIDE

Model WINCOMM4 . . . \$ 299.00
Board, cable, manual, software

Model WINCOMM8



The Model WINCOMM8 combined with the Model HICOM/9 Windows driver makes a great combination when more than 4 ports are required under Windows. The Model WINCOMM8 occupies 64 consecutive I/O locations but HICOM/9 makes Windows port

addressing a snap. For special addressing requirements, a custom PAL can be installed. Using the PAL option will allow you to obtain COM1: thru COM4: address, XENIX comm address, or any other standard or nonstandard address configuration.

FEATURES

- 8 RS232 Ports with Full Modem Control
- Extended AT Interrupts, Selectable for Each Port
- Extended Address Range for UNIX / SCO XENIX
- Interrupt Status Register
- Interrupt Sharing
- 16550 UARTs Included

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1073

ORDERING GUIDE

Model WINCOMM8 . . . \$ 499.00
8-Channel Board, software, manual

Windows Device Driver for Non-Intelligent Multi-Port Serial Cards

Model HICOM/9

The Model HICOM/9 Windows driver provides the PC/XT/AT, with a software driver, under Windows 3.1, that directly supports up to nine serial ports. Programmable controllers, data entry terminals, timetclocks and any communications application running under Windows 3.1 requiring multiple ports can benefit from the use of HICOM/9. Just as with DOS applications, distances of up to 5000 feet, or 1515 meters (RS422) are easily accommodated when utilizing the HICOM/9 Windows driver and the appropriate communications adapter.

WINDOWS COMMUNICATIONS

Windows 3.1 provides a versatile and easily configurable interface to support up to 4 COM: ports with the standard driver. Under Windows 3.1, up to 9 serial ports can be easily configured if using the new HICOM/9 Windows driver. The Windows HICOM/9 ports applet allows the user to configure each port. The user is allowed to select or define the COM port, Baud Rate, Data Bits, Stop Bits, Flow Control, Base I/O Address, IRQ, and 16550 FIFO UART usage. By providing access to the "AT" IRQ lines 10, 11, 12 and 15, higher data throughput and reliable communications can be achieved by assigning each serial port its own IRQ line.

FEATURES

- Supports Up To 9 Serial Ports Under Windows 3.1
- Maintains Standard COM1:Access
- Supports Both Standard & 386 Enhanced Modes Under Windows 3.1
- Programming Interface is Identical to That For The Standard Microsoft Driver
- Simple Installation Program to Allow You to Get Up & Running Fast
- Driver Replaces Limited Windows 3.1 Driver
- Technical Support Provided at No Cost
- Supports 82510 UART

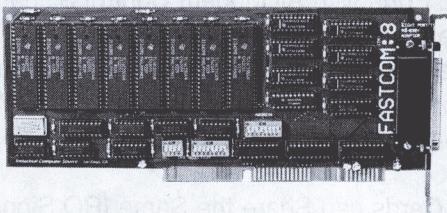
ORDERING GUIDE

Model HICOM/9 \$ 99.00



Multi-Channel, High-Speed Adapters

Model FASTCOM8



The FASTCOM8 is an advanced multi-channel RS232 interface designed for commercial, industrial, and OEM applications. The FASTCOM8 uses the high performance 16550 UARTs and makes the board compatible with DOS, Windows and UNIX.

The eight channel FASTCOM8 inherits all of the hardware/software features of our popular four channel FASTCOM4 adapter. Software and hardware systems designed using the FASTCOM4 will benefit from the advanced features of the FASTCOM8.

FEATURES

- 8 RS232 Ports
- Uses 16550 UARTs
- AT Interrupts
- SMART14 Software Included
- 16 Byte FIFO for Improved Throughput

The FASTCOM8 can operate with a FASTCOM4 on the same bus. Its switch selectable address and IRQ sharing allow multiple FASTCOM boards to be installed in a single system.

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1036

ORDERING GUIDE

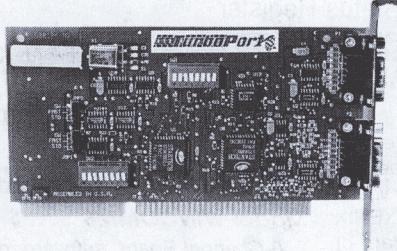
Model FASTCOM8 \$ 599.00

RS232, 8-port card, software, manual & cable

SPECIFICATIONS

No. of Ports	8 RS232
UART	TIL16C550
Baud Rate	50 - 256k
Interrupt Levels	2-7, 10, 12, 15
Buffering	Transmit - 16 bytes Receive - 16 bytes
Signals Supported	TXD, RXD, DTR, DSR, DCD, RTS, CTS, & RI
Bus	16 bit
Power Requirements	+5V @ 600mA +12V @ 6mA -12V @ 6mA

Model TURBOPORT/2



High-Speed Serial I/O Ports

FEATURES

- Supports Data Rates up to 460.8kbps
- Ideal for 28.8kbps Modems
- One or Two Programmable Ports for ISA Systems
- Multiple-Strike Surge Protection on Every Signal

Today's remote access applications demand serial ports considerably faster than standard serial ports installed in most PCs. Four times faster than V.34 modems, the TURBOPORT family is designed to support the latest and fastest modern standards.

TURBOPORT controllers easily accommodate data rates up to 460.8kbps. Such speeds significantly reduce transmission times and telephone costs. Designed to deliver fast, reliable connections for remote PC users working in Windows, NetWare, OS/2 or DOS environments, these communications accelerators also may be used on the network side for modem connections supporting small numbers of remote users.

Each port is serviced by a 16C650 UART with twice the FIFO memory capability of standard 16550 UARTS. These 32-byte transmit and receive FIFOs enable the TURBOPORT controllers to maximize modem connections and deliver accurate data transmissions at high speeds. The cards are software-configurable and offer automatic software/hardware flow control.

SPECIFICATIONS

PORTS	
Number of Ports	1 - TURBOPORT/1 2 - TURBOPORT/2
Interface	EIA-232
Baud Rates	Up to 460.8kbps
Bus Interface	8-bit with extended interrupt support
UART	16C650, one per port
Data Buffers	32-byte transmit and receive FIFO per port

GENERAL

I/O Address	COM1: through COM4:
IRQ Options	Shared or Individual

Interrupts 2-5, 10-12, 15

Power Required +5VDC @ 160mA
+12VDC @ 40mA
-12VDC @ 38mA

PHYSICAL

Temperature Range	Operating: 10 to 55°C Storage: -10 to +70°C
Relative Humidity	10 to 90% RHNC
Size	3.375" x 6.37" (86 x 162mm)
Connector	9-pin D-sub EIA-574 serial connector

ORDERING GUIDE

Model TURBOPORT/1 . . . \$ 89.00

Single port card, software, manual

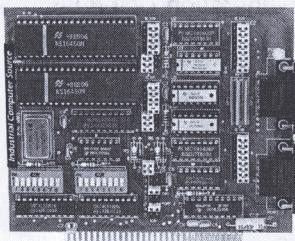
Model TURBOPORT/2 . . . \$ 129.00

Dual port card, software, manual

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1167

2-Port PC Adapters

Model SPRT2A/AT



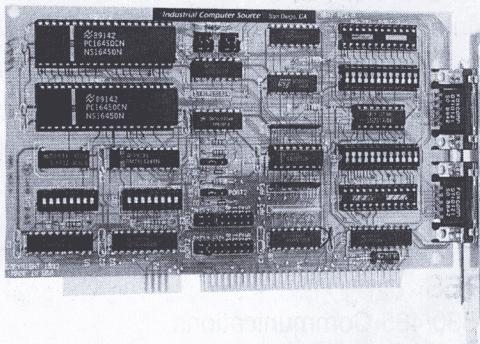
1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1067

ORDERING GUIDE

Model SPRT2A/AT \$ 229.00

2-port card, software & manual

Model SPRT2B/AT



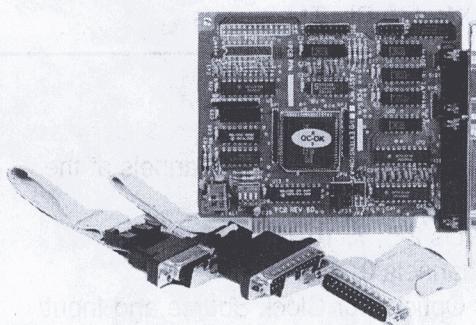
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EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1067

ORDERING GUIDE

Model SPRT2B/AT \$ 239.00

2-port card, software & manual

Model SPC20



ORDERING GUIDE

Model SPC20 \$ 69.00

FEATURES

- Dual RS422/485 or RS232. Ports Can Be Mixed
- Can Be Used in Short Slot
- Addressable COM1-COM4
- DB9, Male Connectors
- 16550 UARTs

SPECIFICATIONS

Ports	2
I/O Address Requirements	8 consecutive locations/port
I/O Base Address	Selectable per port
Interrupts	1 of 4 selectable per port

FEATURES

- Dual RS232 or RS422/485 Ports Can Be Mixed
- Extended AT Interrupts
- Addressable COM1-COM4
- 16550 UARTs

SPECIFICATIONS

Ports	2
I/O Address Requirements	8 consecutive locations/port
I/O Base Address	Selectable per port
Interrupts	1 of 9 selectable per port

Serial Communication

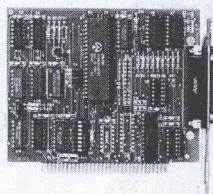
FEATURES

- 2 (RS232) Compatible Serial Ports
- PC Compatible
- COM1 thru COM4 Supported
- Printer Port
- LPT1, LPT2 or LPT3



Sync/Async Adapters

Model ACB2



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1084

The ACB2 advanced communication board provides the IBM PC/XT/AT and compatibles with a synchronous high-speed DMA communication port. The ACB2 supports RS232 and RS422 communications.

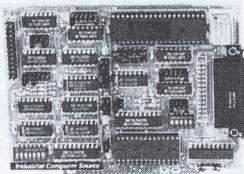
ORDERING GUIDE

Model ACB2 \$ 299.00

FEATURES

- Sync/Async Operation Using 8530 SCC
- Selectable Port Address, IRQ Level, & DMA Channel
- Supports TD, RD, RTS, CTS, RXC, & TXC Signals
- External Clock Jumper for Transmit Clock
- DMA to 880k Baud
- SDLC, HDLC & X.25 Compatible

Model ACB3



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1030

The ACB3 advanced communication board provides the IBM PC/XT/AT and compatibles with synchronous high-speed DMA communication port. The card supports 2, RS-232 communication ports. The ACB3/SP is a single port version

ORDERING GUIDE

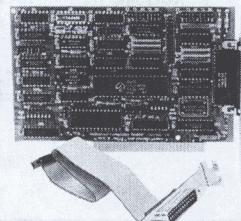
Model ACB3 \$ 319.00

Model ACB3/SP \$ 169.00

FEATURES

- Two Channels of Sync/Async Communications Using 8530 SCC
- DMA Supports Data Rate to 880K
- Selectable Port Address, IRQ Level (2, 3, 4, 5) and DMA Channel 1 or 2
- RS232 Interface With Full Modem Control
- Supports TD, RD, RTS, CTS, DSR, DCD, DTR, TXC, RXC, TT Signals
- Jumper Options for Clock Source and I/O
- On-Board EPROM Socket (16KB or 128KB)

Model ACB4



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1029

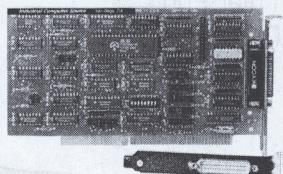
ORDERING GUIDE

Model ACB4 \$ 319.00

FEATURES

- RS422/530/485 Communications
- Two Channels of SYNC/ASYNC Communications Using 8530 SCC Chip
- Full Modem Control RS530
- Selectable Address/IRQ
- DMA to 880K Bits Per Second
- T1 and F-T1 Pipeline Interface
- S/W Programmable Baud Rate
- Supports TD, RD, RTS, CTS, DSR, DCD, DTR, TXC, RXC, LL, RL, TM Signals

Model ACB4-AT



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1028

ORDERING GUIDE

Model ACB4-AT \$ 339.00

FEATURES

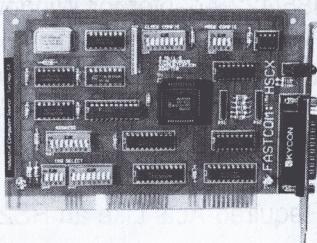
- All Features of ACB4 Plus
- Half or Full Duplex on Both Channels at the Same Time For XMIT or REC
- IRQ Levels 2-5, 7, 10-12, & 15
- DMA Channels 0, 1, 2 or 3
- Jumper Options for Clock Source and Input/Output Mode

Order Now!

Serial & Parallel Adapters

Advanced High Speed Synchronous Communications Adapter

Model FASTCOM/HSCX



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1035

FEATURES

- High Speed, Up to 4Mb/sec
- Extremely Easy to Program and Use
- Supports HDLC, SDLC, ISDN LAP D, & X.25 LAP B
- RS422/485 Multidrop
- 64 Byte FIFO
- Connector Conforms to ANSI/EIA/TIA-530-A-1992
- Windows Driver Included

The FASTCOM/HSCX adapter is the most advanced synchronous communications adapter in the industry. Supporting data rates up to 4Mbits/s, the FASTCOM/HSCX is as easy to install and use as a standard PC serial adapter. The FASTCOM/HSCX is compatible with other HDLC adapters, yet features 4 times the speed of 82530 based adapters and is much easier to program.

SPECIFICATIONS

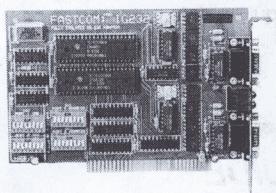
Controller	Siemens 82526
Drivers/	RS422/485
Receivers	
Power Requirements	+5V @ 300mA (typ)

ORDERING GUIDE

Model FASTCOM/HSCX \$ 325.00
Board, manual, software

True Isolated RS-232 Adapter

Model FASTCOM/IG232DP



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1089

FEATURES

- Designed to Comply with VDE Isolation Requirements
- Dual and Single Channel Versions
- 5000V Opto-Isolator Breakdown
- Both Channels Fully Isolated
- Fully Isolated Ground & Signal Lines
- COM1 thru COM4 Compatible

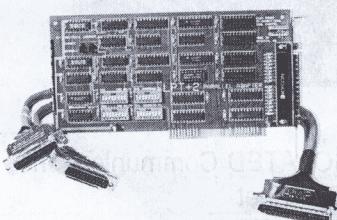
ORDERING GUIDE

Model FASTCOM/IG232DP \$ 230.00
Dual channel board, manual, SMART14 software

Model FASTCOM/IG232 \$ 175.00
Single channel board, manual, SMART14 software

Dual Port High Power Parallel Card

Model FASTCOM/LPT-DP



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1034

FEATURES

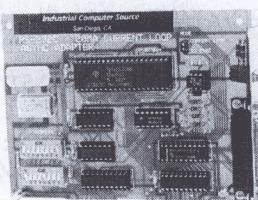
- 2 Completely Independent, Fully Bi-Directional, Parallel Ports
- Up To 10 Cards in a System Using Shared Interrupts
- Cable Lengths up to 150' For Each Printer

ORDERING GUIDE

Model FASTCOM/LPT-DP \$ 255.00

20mA Current Loop Interface

Model L20MA



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1076

FEATURES

- Will Operate as 20mA or RS232
- High Performance 16550 UART
- Functions as COM1 Thru COM4
- SMART14 Software Included
- Shared Interrupts for Multiple Boards

ORDERING GUIDE

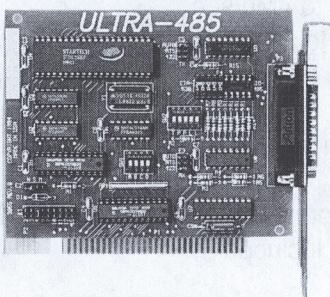
Model L20MA \$ 175.00



RS422/485 Adapters

RS485/422 Adapter for Windows, OS/2, and DOS

Model **ULTRA-485**



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1152

FEATURES

- Single Channel RS485/422 Adapter for Windows, Windows NT, OS/2, & DOS Communications
- Automatic Control of RS485 Driver Enable Signal
- Speeds to 115kbps
- Selectable Termination, Echo Mode, 2/4 Wire Operation
- No Special Drivers Required-Acts Like an RS232 Port to the System

The Model Ultra-485 incorporates unique hardware circuitry that enables the RS485 interface to appear to be an RS232 interface, requiring no additional software drivers. Previous RS485 interfaces required the software to "turn on" RTS to transmit and then "turn off" RTS at the end of the character. This required overhead and special interrupt processing. New operating systems such as Windows, Windows-NT, OS/2 and other multi-user operating systems typically will not allow the user access to the low level registers of the UART chip without writing a specialized driver or require significant overhead to accomplish this simple task. Low level RS485 driver maintenance is handled by the hardware on the ULTRA-485 rather than through software, therefore, initial development for RS232 communications can be effortlessly modified to RS485.

SPECIFICATIONS

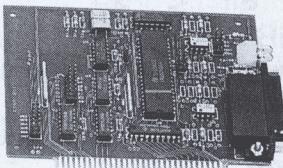
Communications Chip 16550 UART
Number of Ports Single RS485/422
Max. Data Rate 115kbps
Max. Data Distance Up to 5000ft.
RS-485 Operation 2 or 4 Wire
Pinout Configuration EIA 530 DTE pinout on DB25P

Handshake RTS, CTS, DCD, DSR, & DTR
Operating Temp. 0 to 50° C
Storage Temp. 20 to 70° C
Relative Humidity 0 to 90% RHNC
Power Requirements +5V @ 160mA
MTBF >150,000 Hrs
MTTR <0.25 Hrs

ORDERING GUIDE

Model **ULTRA-485** \$ 179.00
Board, manual

Model **RS422AT-P**



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#:1129

FEATURES

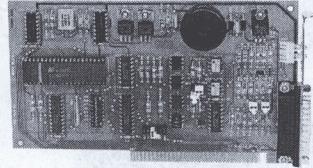
- RS422/485 Interface
- Selectable Address
- Two or Four Wire Operation
- Short Slot
- PC/XT/AT Compatible
- Max. Baud Rate 56k
- 0 to 60°C
- 16450 UART

LIFETIME GUARANTEE!

ORDERING GUIDE

Model **RS422AT-P** \$ 129.00
Board, Manual, Driver Software

Model **RS422I-P**



FEATURES

- OPTICALLY ISOLATED Communications
- Distances to 5000 Feet
- RS422/485 With Half/Full Duplex Operation
- 16450 UART
- Compatible With PC/XT/AT & 386 Systems
- Half Card Length

LIFETIME GUARANTEE!

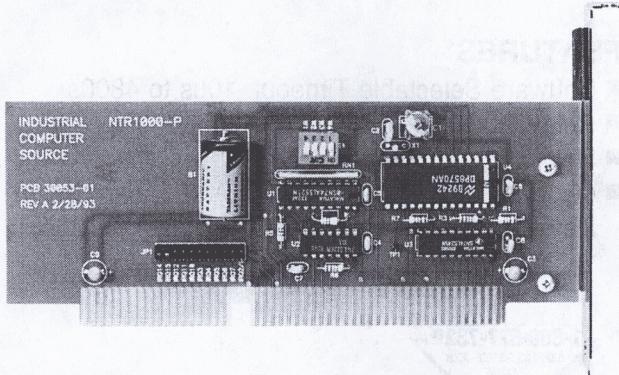
ORDERING GUIDE

Model **RS422I-P** \$ 195.00
Board, Manual, Driver Software

Network Time Reference Card

Accurate, Stable Real-Time Clock

Model NTR1000-P



FEATURES

- Accuracy of ± 0.01 Seconds
- Stability of ± 5 Seconds/Month, Operating Temperature 0 to 50°C
- Auto-Update of DOS Clock from 1 Minute to 45.5 Days
- AT Interrupts
- Now Includes Novell Driver

LIFETIME GUARANTEE!

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC:# 1034

The NTR1000-P Network Time Reference card provides an inexpensive way to maintain very accurate time in your PC. The NTR1000-P has a stability of ± 5 seconds per month, an improvement two orders of magnitude greater than the average DOS clock. Quite often the DOS clock is even further off than that. Many control, test and measurement applications require a more stable clock, but not the synchronization to WWV. The NTR1000-P fills that need.

The heart of the NTR1000-P is the National Semiconductor Real Time Clock IC, DP8570A, with battery backup power, and is referenced to a stable crystal with a known aging rate. The oscillator is adjustable under normal PC operating temperatures to provide precise and accurate reference.

EASY TO USE

Setup of the NTR1000-P is very simple. A single four position DIP switch is used to select address between 200H and 3E0H on 20H boundaries. An eleven position header is provided to select the IRQ level. The included device driver is installed via the CONFIG.SYS file and includes four parameters; PORT, VPDATMW, VPDATEHR and IRQ. The default port is 340H, the

default IRQ is NONE (no periodic update), and the default update rate is 1 minute between updates. The update rate is specified in decimal (0 to 65535) and represents the number of minutes between periodic updates of the BIOS clock.

SETTING THE TIME

Once the driver is loaded, setting the time is no different than normal. When you set the time, the NTR1000-P's software sets its clock and then maintains stable time. Set how often you want the DOS clock updated and you're off and running.

NOVELL DRIVER INCLUDED

Included on the software disk is a Novell NetWare Loadable Module (NLM) that allows the NTR1000-P to be installed in a server on a Novell network. The NLM will work under NetWare 3.11, 3.12, 4.0, 4.01, 4.02, and 4.1. The driver requires setting the month, day and year as well as the time. The operator also selects the update rate in minutes (1-59) or hours (1-999). The driver can be loaded in the AUTOEXEC.NCF if you desire to have it autoboot when the server is turned on.

SPECIFICATIONS

Accuracy	± 0.01 Seconds
Stability	± 5 Sec/Month @ 25°C ± 1 Sec/ $^\circ\text{C}$
Aging Rate	<3ppm
Interrupt Levels	Extended AT Interrupts
Temperature Range	Operating, 0 to 50°C Storage, -10 to 70°C

ORDERING GUIDE

Model NTR1000-P \$ 199.00
Board, Manual, Software

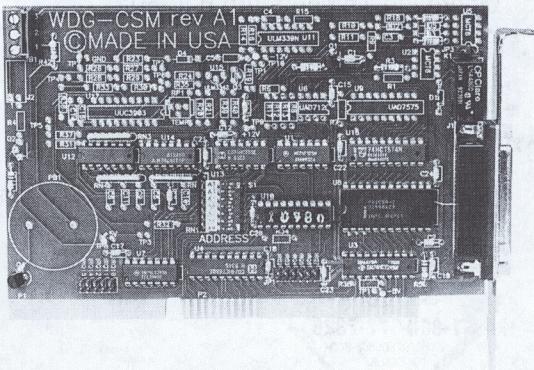


INDUSTRIAL COMPUTER SOURCE

800-459-7442

Multifunction Watchdog Timer Card

Model WDT500-P



The newest member of the Watchdog Timer Family is the Model WDT500-P Series. The basic model, WDT500-P provides a software selectable time-out from 10 microseconds to 4800 seconds. In the event that your application program does not reset the card during that period, a relay output and/or a reset line output is available to reset the computer.

The Model WDT501-P adds several options to the card. The first is a voltage monitor. This monitor checks all four computer voltages to see if they have exceeded 7% of nominal. The next two are for temperature monitoring. The first temperature option is an alarm if the temperature exceeds 50° C. An adjustment is available to set the temperature either lower or higher. The next temperature option is an actual monitor. The temperature can be read to within -14° C. Another option is a buzzer that will sound if the watchdog times out. A

fan speed detector is provided that will trigger if the fan tachometer output drops below 50Hz. Still another option provided is two isolated input lines that are tied to a change of state detector. If either of these lines changes, the state detector will generate an IRQ if desired. The last option is two isolated output lines that are connected to the reset output. They are of opposite polarity.

SOFTWARE

A software utility disk is provided to aid in installation as well as provide programming examples. The example programs are presented in QuickBASIC, C, and Pascal. Source code for each program is included. A utility is provided titled FINDBASE that aids in locating a free block of I/O space for the card. There is also a Windows DLL software provided for those users who wish to program in VisualBASIC.

FEATURES

- Software Selectable Timeout: 10µs to 4800s
- Relay Output & Reset Line Output
- Half-size, AT Compatible
- Optional Temperature Monitor/Alarm, Fan Speed Detect, & Buzzer Plus More! (WDT501-P)

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1190

SPECIFICATIONS

WATCHDOG TIMER

Time-Out Selectable from 10µs to 4800s

Clock 894.88625kHz, derived from color clock (14.31818MHz/16)

Relay Contact Rating Max switching current 2A DC or AC, 30VA max

GENERAL

I/O Space 8 bytes

IRQ Selections 2-7, 10-12, 14, or 15

Power Required WDT500-P: +5VDC @ 125mA
WDT501-P: +5VDC @ 250mA

PHYSICAL

Temperature Range Operating: 0 to 60°C Storage: -50 to +120°C

Relative Humidity 10 to 90% RHNC

Size 6.5" x 3.9" (165 x 99mm)

Connector Type DB25 female

ORDERING GUIDE

Model WDT500-P..... \$ 125.00

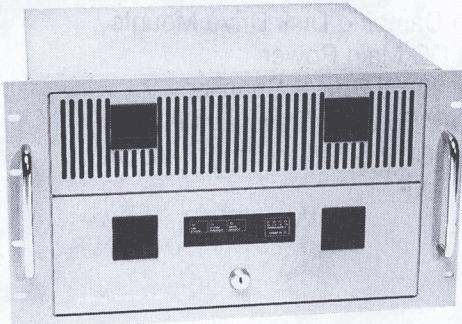
Basic card, software, manual

Model WDT501-P..... \$ 195.00

Card w/ options, software, manual

High Drive Capacity 20 Slot Rack Mount System Chassis

Model 7520-34H



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC# 1009

The 7520-34H is one of the newest models of 20 slot chassis available from Industrial Computer Source. The 7520-34H has been designed to take best advantage of the 20 slot passive backplane architecture used in prior models.

SPLIT BACKPLANE MODELS

The 7520-34H chassis is also available in special models that incorporate additional circuitry to permit "splitting" the backplane into as many as five sections.

REDUNDANT POWER SUPPLIES

The 7520-34H chassis may also be ordered with an optional redundant power supply feature. In this configuration the chassis includes two separate 300W power supplies in a N+1 configuration.

FEATURES

- 20 Slot Passive Backplane
- Up to 4 Half Height Disk Drives
- 300W Power Supply
- Optional 48VDC Input Mains
- Front Panel System Status Display
- UL Recognized
- Bellcore Certifiable
- Split Backplane Models Available
- New EISA & PCI Models Available
- Optional Redundant (N+1) Power Supplies



SPECIFICATIONS

Backplane	Passive	AC Input (cont.)	Redundant Supplies 300W Output Each N+1 Automatic Hot Swappable Alarm Signal on Failure
Bus Architecture	ISA, EISA, or PCI	Optional 48VDC Power Input	350W Output +5VDC @ 50A +12VDC @ 8A -5VDC @ 2A -12VDC @ 4A
Number of Slots	ISA- 20 Full Length EISA- 15 Full Length 5 Full Length ISA PCI-16 Full Length ISA 2 Full Length PCI 1 Dedicated CPU Slot	OPERATING ENVIRONMENT	
Split Backplanes	2 x 10 Slot in Model 7522-34H 4 x 5 Slot in Model 7524-34H Other Configurations Available	Temperature	0 to +50°C
POWER SUPPLY	90-130/180-265 Input, 47-63Hz, Switch Selected 300W Output +5VDC @ 30A +12VDC @ 12A -5VDC @ 0.5A -12VDC @ 0.5A	Humidity	8% to 80% RHNC
		Altitude	-300 to 20,000ft
		Vibration	1.5G, 3 Axis Vibration
		Shock	10G, 3 Axis Shock

ORDERING GUIDE

Model 7520-34H \$1995.00

20 Slot Chassis, 300W, AC Input Power

Model 7520-34H-DC48 \$2995.00

20 Slot Chassis, 350W, DC Input Power

Model 7520E-34H \$2475.00

15 EISA, 5 ISA Slot Backplane,
300W,
AC Input Power

Model 7520P-34H \$2445.00

16 ISA, 2 PCI Slot Backplane, 300W,
AC Input Power

SPLIT BACKPLANE MODELS

Model 7522-34H \$2295.00

All features of basic chassis with ISA back-plane split into 2 sections of 10 slots each.

Model 7524-34H \$2295.00

All features of basic chassis with ISA backplane split into 4 sections of 5 slots each.

REDUNDANT POWER SUPPLY MODELS

Model 7520-34HR \$2995.00

20 Slot Chassis, 300W, AC Input Power, Redundant Power Supplies

Model 7520E-34HR \$3475.00

15 EISA, 5 ISA Slot Backplane,
300W, AC Input Power, Redundant Power Supplies

Model 7520P-34HR \$3445.00

16 ISA, 2 PCI Slot Backplane, 300W, AC Input Power, Redundant Power Supplies

SPLIT BACKPLANES/REDUNDANT POWER SUPPLY MODELS

Model 7522-34HR \$3295.00

20 Slot ISA Backplane split into 2 sections of 10 slots each. Individual Keyboard & Reset Connections. 300W Redundant Power Supply

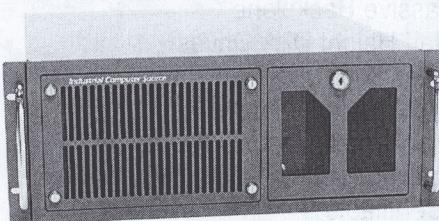
Model 7524-34HR \$3295.00

20 Slot ISA Backplane split into 4 sections of 5 slots each. Individual Keyboard & Reset Connections. 300W Redundant Power Supply



10 & 15 Slot Rack Mount System Chassis

Model 7415-23V



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1010

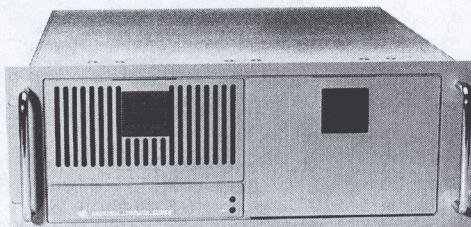


Rack mount system chassis for passive backplane single board computer or motherboard systems. These chassis provide the filtered cooling air needed by today's high performance systems as well as the convenience of easily serviced backplanes or easily accessible motherboards. A full line of other models are available from 6 through 20 expansion slots per rack, or shelf mounting.

FEATURES

- ISA, EISA & ISA/PCI Passive Backplanes
- Vibration Damping Disk Drive Mounts
- Optional DC Main Power
- 250W or 300W Power Supplies
- Filtered Air Positive Pressurization
- Choice of CPU's-386 through Pentium or Alpha AXP

Model 7310-24V



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1201

ORDERING GUIDE

15 SLOT MODELS

Model 7415-23V \$ 1229.00

Chassis, 250W power supply,
15 slot backplane

Model 7415-33V \$ 1329.00

Chassis, 300W power supply,
15 slot backplane

Model 7415P-23V \$ 1649.00

Chassis, 250W power supply,
11 ISA, 2 PCI slot backplane

Model 7415E-23V \$ 1689.00

Chassis, 250W power supply,
15 slot EISA backplane

Model 7415P-33V \$ 1749.00

Chassis, 300W power supply, 11 ISA,
2 PCI slot backplane

Model 7415E-33V \$ 1789.00

Chassis, 300W power supply,
15 slot EISA backplane

Model 7415-23V-DC48 \$ 1629.00

+48VDC or -48VDC in, 300W supply

10 SLOT MODELS

Model 7310-24V \$ 899.00

System Chassis, 10 Slot ISA
Backplane, 250W Supply

Model 7310-34V \$ 999.00

System Chassis, 10 Slot ISA
Backplane, 300W Supply

Model 7310-24V-DC4 \$ 1299.00

System Chassis, 10 Slot ISA
Backplane, 48VDC Input, 300W
Supply

Model 7310E-24V \$ 1219.00

System Chassis, 10 Slot EISA
Backplane, 250W Supply

Model 7310E-34V \$ 1319.00

System Chassis, 10 Slot EISA
Backplane, 300W Supply

Model 7310E-24V-DC2 \$ 1619.00

System Chassis, 10 Slot EISA
Backplane, 24VDC Input, 240W
Supply

Model 7310E-24V-DC4 \$ 1619.00

System Chassis, 10 Slot EISA
Backplane, 48VDC Input, 300W
Supply

Model 7310P-24V \$ 1259.00

System Chassis, 6 ISA/2 PCI Slot
Backplane, 250W Supply

Model 7310P-34V \$ 1359.00

System Chassis, 6 ISA/2 PCI Slot
Backplane, 300W Supply

Model 7310P-24V-DC4 \$ 1659.00

System Chassis, 6 ISA/2 PCI Slot
Backplane, 48VDC Input, 300W
Supply

MOTHERBOARD MOUNTING MODELS

Model 7408-23V \$ 1029.00

Chassis, 250W power supply, mount
location for motherboard CPUs.

Model 7408-23V-DC12 \$ 1429.00

12VDC in, 100W power supply

Model 7408-23V-DC24 \$ 1429.00

24VDC in, 240W power supply

Model 7408-23V-DC48 \$ 1429.00

+48VDC or -48VDC in, 300W supply

Model 7308-24V \$ 699.00

System Chassis, Motherboard
Mounting Kit, 250W Supply

Model 7308-34V \$ 799.00

System Chassis, Motherboard
Mounting Kit, 300W Supply

Model 7308-24V-DC2 . \$ 1099.00

System Chassis, Motherboard
Mounting Kit, 24VDC Input, 240W
Supply

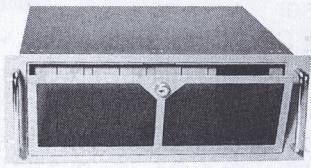
Model 7308-24V-DC4 . \$ 1099.00

System Chassis, Motherboard
Mounting Kit, 48VDC Input, 300W

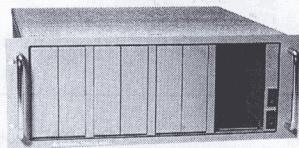
Rack Mount Accessories

Rack Mount Drive Bays

Model 6531-RMDB



Model 6531-RMDB



FEATURES

- Dual 150W Power Supplies
- 60CFM Filtered Input Cooling Fan
- Up to 4 Full Height Devices or 8 Half Height Devices
- Drives Easily Installed/Removed
- Internal SCSI Cable Provided



ORDERING GUIDE

Model 6531-RMDB \$ 695.00

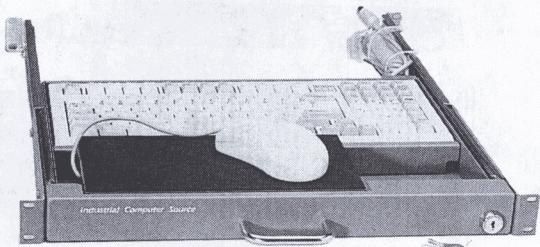
Drive Bay, Power Supplies, Cooling Fan

Model 6531-RMDBD \$ 895.00

Drive Bay with Locking Door, Power Supplies, Cooling Fan

Rack Mounted Keyboard

Model 6531-KB3M



FEATURES

- Rack Mount 1.75" High
- 101-Key AT Keyboard
- Mouse Pad & Storage Compartment
- Fits 22" to 30" Deep Cabinets
- Available Without Mouse Pad & Storage Compartment

ORDERING GUIDE

Model 6531-KB3M \$ 375.00

Keyboard and slide assembly, Mouse not included

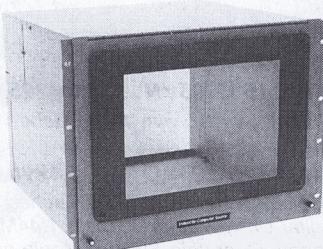
ACCESSORY

Model KB3/A-SKIN \$ 30.00

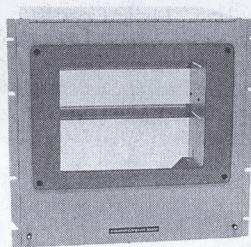
Protective overlay film for keyboard

Rack Mount Monitor Kits for Monitors up to 17"

Model 6531-UM



Model 6531-UMM



1-800-677-7329

EXPRESS SOURCE-BOOK

FAXLINE

DOC#: 1193

FEATURES

- Rack Mount for Most 12" to 17" Monitors
- Easy Installation
- Protective Lexan Face Plate
- Easy Access to Monitor
- Pre-Assembled or Knocked Down Kit Form

ORDERING GUIDE

Model 6531-UM \$ 329.00

Universal monitor mount, monitors to 14"

Model 6531-UMK \$ 259.00

Kit form, monitors to 14"

Model 6531-UMM \$ 379.00

Universal monitor mount, monitors up to 15"

Model 6531-UMMK \$ 299.00

Kit form, monitors up to 15"

Model 6531-ULM \$ 399.00

Universal monitor mount, monitors up to 17"

Model 6531-ULMK \$ 319.00

Kit form, monitors up to 17"

DIMENSIONS

EXTERNAL (H x D x W)

6531-UM 14" x 18.75" x 19"
(356 x 476 x 483mm)

6531-UMM(K) 17.5" x 19.2" x 19"
(445 x 488 x 483mm)

6531-ULM(K) 19.2" x 22.1" x 19"
(488 x 561 x 483mm)

INTERNAL (H x D x W)

6531-UM 13.75" x 17.75" x 16.75"
(349 x 451 x 426mm)

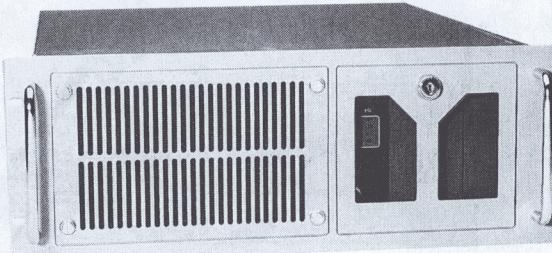
6531-UMM(K) 16.5" x 18.2" x 16.7"
(419 x 462 x 424mm)

6531-ULM(K) 18.7" x 21" x 16.7"
(475 x 533 x 424mm)



ALPHA AXP™ RISC System

Model 11500-23VN



FEATURES

- Digital Equipment Corp. Alpha AXP Processor
- 166Mhz CPU Clock Rate
- Windows NT or Digital Unix Operating Systems
- ISA and PCI Bus Expansion Slots
- Ruggedized Rack Mount Chassis

1-800-677-7329

EXPRESS SOURCE-BOOK
FAXLINE

DOC#: 1163

These systems are based on the DEC chip 21066-AA Alpha AXP, 64bit, RISC microprocessor known for its performance in floating point and graphical operation applications. With a choice of operating systems that opens up the world of Windows compatibility or of Unix compatibility, these systems answer your high performance needs. The Alpha AXP processor itself operates at 166Mhz and is upgradable to future releases at 33Mhz multiples.

Here is an opportunity to use your existing ISA compatible feature cards, new PCI feature cards and Windows NT applications to speed up existing applications or create high performance new applications.

The system board includes all the standard features required of most systems as well as some advanced features such as PCI Bus expansion slots. Under Windows NT, both FAST SCSI-2 and IDE disk controllers are resident and supported on the motherboard. Under Digital Unix, the IDE disk controller is not used or supported. The on-board floppy disk controller accepts all current high-density, capacities of floppy disk drives from 1.2MB to 2.88MB in the NT version and both 1.44MB and 2.88MB 3.5" drives in the Digital Unix configuration. The system chassis will hold up to three 3.5" or 5.25" devices in addition to the 3.5" high density floppy drive. The system board may be optionally mounted in other Industrial Computer Source chassis on special order for increased drive capacities, additional cooling capacity requirements or other than rack mounting configurations.

CHASSIS & CPUs

SPECIFICATIONS

Processor	DECchip 21066-AA Alpha AXP Microprocessor	Cache Memory	256K or 1MB External Cache Options
Clock Rate	CPU - 166Mhz ISA Bus - 8.33Mhz PCI Bus - 33Mhz	Expansion Slot	5 ISA, 1 Location Shared with PCI 3PCI, 1 Location Shared with ISA Limited Length For Feature Cards Varies with Location
Processor Upgradeable	ZIF for Future Alpha AXP Chips in 33Mhz Multiples	Dimensions	Baby AT Size and Hole Pattern 8.66" x 13.0" (220 x 330 mm) 5.57" (142 mm) Highest Point
Floating Point Format	IEEE and VAX (F and G)	MTBF	361,000 P.O.H. @ 25°C 173,600 P.O.H. @ 40°C
Memory	8MB Minimum, ECC Corrected 256MB Maximum, ECC Corrected	Operating Temperature	55°C Maximum with Fan Cooled Heat Sink (included, not shown)
SIMMs	2 Banks, 2 Sockets per Bank 72 pin SIMMs, 36-bit 70nS or Faster SIMMs Required		

ORDERING GUIDE

Model 11500-23VN.... \$3995.00

166Mhz System with 256K Cache, 1.44MB Floppy

Model 11500-23VO ... \$4695.00

166Mhz System with 256K Cache, Digital Unix, 2-user License, 1.44MB Floppy. Operating System Media and Documentation Must be Ordered Separately. (Although a C Compiler is included with the operating system, the Developer's Extension must be purchased for use of the debugger.)

Model 11500-23VOF .. \$4995.00

166Mhz System with 256K Cache, Digital Unix, 2-user License, Developer's Extension License, Server Extensions License, 1.44MB Floppy. Operating System Media and Documentation Must be Ordered Separately.

Model 11501-23VN.... \$4295.00

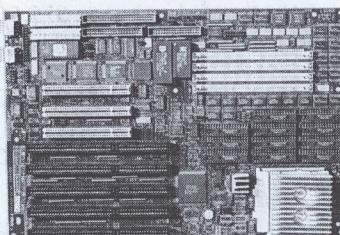
166Mhz System with 1MB Cache, 1.44MB Floppy

Model 11501-23VO ... \$4995.00

166Mhz System with 1MB Cache, Digital Unix, 2-user License, 1.44MB Floppy. Operating System Media and Documentation Must be Ordered Separately.

Model 11501-23VOF .. \$5295.00

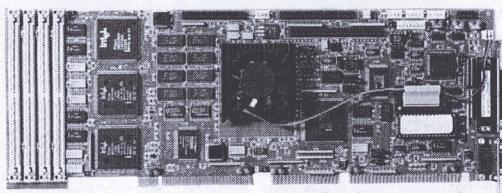
166Mhz System with 1MB Cache, Digital Unix, 2-user License, Developer's Extension License, Server Extensions License, 1.44MB Floppy. Operating System Media and Documentation Must be Ordered Separately.



Call For Your Custom/Special Requirements

Single Board Pentium CPU to 100Mhz

Model SB586TCP/100



The SB586TCP Series is the newest in the passive backplane CPU line offered by Industrial Computer Source based on Intel's Pentium processor technology and the Peripheral Component Interconnect (PCI) local bus. The card is a single board PC that includes the floppy drive controller, both IDE and PCI Local Bus SCSI-2 device controllers, two serial ports and a Centronics bi-directional parallel printer port.

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1111

FEATURES

- Intel Pentium Processor
- PCI Local Bus Extension
- DOS, Unix, Windows NT, OS/2 Compatible
- 256K Cache RAM
- 128MB On-Board DRAM Capacity on 90/100
- On Board PCI Local Bus SCSI-2 Controller
- On Board IDE and Floppy Disk Controllers
- Includes Fan Cooled Heat Sink



SPECIFICATIONS

Processor Supported	Intel Pentium	SIMM Support	2 Banks, 2 Sockets Each, 72-Pin
Clock Rate	100Mhz, 90Mhz, 66Mhz, or 60Mhz		Supports 256Kx36(1MB), 512Kx36(2MB), 1Mx36(4MB), 4Mx36(16MB), or 8Mx36(32MB) SIMMs
Chipset	Intel PCI Chip Set, Neptune (100,90) Mercury (66, 60)		

ORDERING GUIDE

Model SB586TCP/100 . . . \$ 2599.00

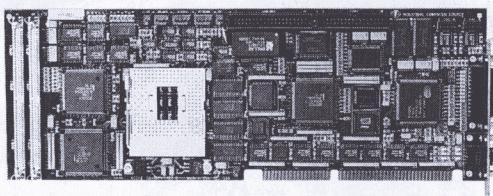
CPU, Processor, Fan Cooled Heat Sink (Long lead times)

Model SB586TCP/90 . . . \$ 2299.00

CPU, Processor, Fan Cooled Heat Sink

Full Featured CPU with On-Board PCI Provides PCI Performance for ISA Bus Systems

Model SB486PV Series



1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1079

FEATURES

- 80486SX Through P24T Processors
- 33Mhz to 100Mhz CPU Clocks
- On-board PCI Bus IDE
- SVGA Video & Non-Video Models
- 128K or 512K External Cache RAM
- Up to 64MB On-board DRAM



SPECIFICATIONS

Processors Supported	80486SX, 80486SX2, 80486DX, 80486DX2, 80486DX4 and P24T in a ZIF Socket	Chip Set	Intel Saturn-2 Chip Set
Processor Clock Rate	25Mhz, 33Mhz, 25/50Mhz, 33/66Mhz, 25/75Mhz, 33/100Mhz and 63Mhz(P24T)	BIOS	AMI WinBIOS Full Feature, FLASH, Field Upgradable (software)
		Memory Capacity	4MB to 64MB Maximum On-board

The SB486PV CPU Series has been designed to bring today's high performance PCI bus capabilities to Single Board Plug-In ISA Bus systems. Compatible with older ISA bus systems, the SB486PV can replace outdated 80286 through slower 80486 systems with the latest available.

ORDERING GUIDE

Model SB4864PV5/100 . . . \$1895.00

80486DX4, 100Mhz CPU, 512K Cache RAM, Serial Port Connectors

Model SB4864PV/100 . . . \$1745.00

80486DX4, 100Mhz CPU, 128K Cache RAM, Serial Port Connectors

Model SB4862PV5/66 . . . \$1665.00

80486DX2, 66Mhz CPU, 512K Cache RAM, Serial Port Connectors

Model SB4862PV/66 . . . \$1515.00

80486DX2, 66Mhz CPU, 128K Cache RAM, Serial Port Connectors

Model SB486PV5/33 . . . \$ 1695.00

80486DX, 33Mhz CPU, 512K Cache RAM, Serial Port Connectors

Model SB486PV/33 . . . \$ 1545.00

80486DX, 33Mhz CPU, 128K Cache RAM, Serial Port Connectors

Model SB486XPV5/33 . . . \$ 1545.00

80486SX, 33Mhz CPU, 512K Cache RAM, Serial Port Connectors

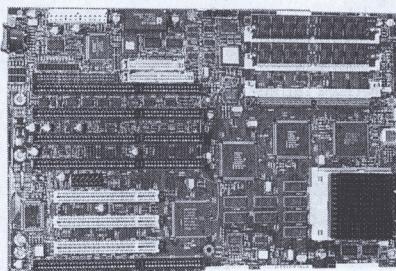
Model SB486XPV/33 . . . \$ 1395.00

80486SX, 33Mhz CPU, 128K Cache RAM, Serial Port Connectors



Pentium CPU PCI Local Bus Motherboard to 100Mhz

Model 586MB100PCI



High performance and high capacity are the key features of the 586MB100PCI series motherboards. Incorporating the Intel 90Mhz and 100Mhz Pentium processors, the system utilize the full power of the PCI (Peripheral Component Interconnect) Bus for graphics, network, and drive controller interfaces. The Intel "Neptune" chip set, is the PCI controller utilized on these system boards.

FEATURES

- Intel Pentium 90Mhz or 100Mhz Processor
- Intel PCI Local Bus Expansion
- 256K Write-Back Cache
- 64 bit Architecture

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1080

See our Master Source-Book
for additional models

SPECIFICATIONS

Processors Supported Intel Pentium in a ZIF Socket, Heat Sink Included
Processor Clock Rate 100Mhz or 90Mhz
Chip Set Intel "Neptune"

SIMM Support 2 Banks, 2 Sockets Each, 72-Pin, Tin Plated Supports 256Kx36(1MB), 512Kx36(2MB), 1Mx36(4MB), 2Mx36(8MB), 4Mx36(16MB) and 8Mx36(32MB) SIMMs

ORDERING GUIDE

Model 586MB100PCI \$ 2149.00

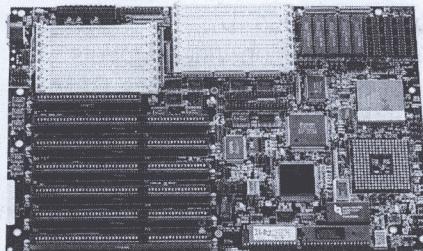
100Mhz Pentium Motherboard, 256K Cache, Bonded Heat Sink

Model 586MB90PCI \$ 1799.00

90Mhz Pentium Motherboard, 256K Cache, Bonded Heat Sink

Upgradeable Full Featured Motherboard

Model 4862MB66P1



When ordered as a part of a system, all required cables will be included at no additional charge.

FEATURES

- 386 or 486 System Board
- 128K Cache Memory
- On-Board System Controllers

1-800-677-7329
EXPRESS SOURCE-BOOK
FAXLINE
DOC#: 1120



SPECIFICATIONS

Processors Supported 386DX, 486SX, 487SX, 486SX/Overdrive, 486DX, 486DX/2
BIOS AMI
Memory Capacity - DRAM 64MB Maximum On-Board DRAM

SIMM Support 4 Banks, 4 Sockets Each, 60-pin 256Kx9 (256KB), 1Mx9 (1MB), 4Mx9 (4MB) SIMMs
Memory Speed Required 80ns or faster (except 486DX/50Mhz) 60ns or faster for the 486DX/50Mhz

ORDERING GUIDE

Model 4862MB66P1 ... \$ 689.00

80486DX/2/66Mhz, 128K Cache, Cables, Manual

Model 486MB50P1 ... \$ 869.00

80486DX/50Mhz, 128K Cache, Cables, Manual

Model 486MB33P1 \$ 669.00

80486DX/33Mhz, 128K Cache, Cables, Manual

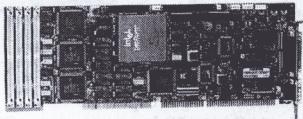
Model 486SXMB33P1 .. \$ 519.00

80486SX/33Mhz, 128K Cache, Cables, Manual

Model 386MB33P1 \$ 475.00

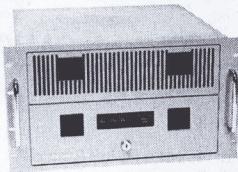
80386/33Mhz, 128K Cache, Cables, Manual

**Within Minutes Receive Technical Data
and Specifications VIA Your own FAX!**



CPU'S

Doc#	Description	Models
1063	Full Featured EISA CPU	SB486TE Series
1065	Single Board Computers	SB486TC Series
1074	Single Board Pentium CPU 60/66MHz	SB586TCP/66
1091	486 EISA/VESA Motherboard	486MB33EE4
1096	Embedded Systems CPUs with PC/104 Bus	SB386SXT/33

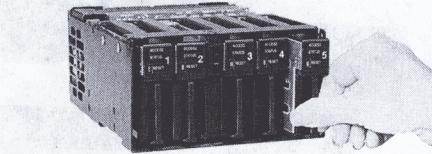


INDUSTRIAL CHASSIS

Doc#	Description	Models
1004	Rack Mounted Chassis with 9" Monitor	8630-RV-10
1005	15 Slot Chassis with EL or LCD Display	8535-LCDC
1006	Rugged, Portable Computer	8435-386S
1044	Expansion Chassis Interconnect Kits	ECIK-ATLT
1136	Industrial Ethernet Workstation	BBLP Series
1137	NEMA4 Sealed Ethernet Workstation	BBFP Series
1159	Ruggedized Portable Computer	8436-MLC
1202	6&10 Slot Passive Backplane and Motherboard Mount Nodes	9200 Series
1203	OEM Card Gage	OEMC Family
1204	8540 Rack or Panel Mount Chassis with 14" Super VGA Monitor	8540 Series

EMBEDDED CONTROLLERS

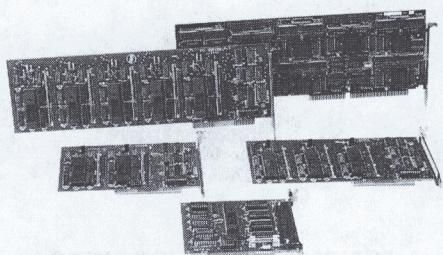
Doc#	Description	Models
1041	Embedded Micro-Controllers Micro Controller CPU 4-8 EXM Module Slots Power Supply Modules Storage Media Modules Video Adapters Communication Interface Modules Input/Output Modules	EMC Series EPS-22 EMC-Chassis EMC-PS50 Various Various Various Various
1042	EMC Chassis	EMC-CH6D
1043	EMC Enclosure	EMC-CH6AT



COMPUTER ACCESSORIES

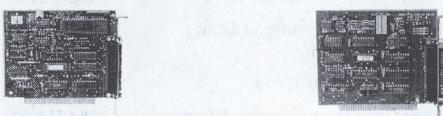
Doc#	Description	Models
1021	Sound BLASTER 16 SCSI-2	CL112102
1022	Sound BLASTER Pro	CL112056
1023	Ergonomic VGA and NTSC Display Accelerator	CHANNEL1
024	Conner C250MQT Tap Backup	C250MQT
1046	Removable Drive Mounts Convert Standard Fixed Disk to Removable	DE100I
1056	Self Contained RAID Systems	Micro2000
1062	VESA IDE Controller	S1342VL
1068	CPU Cooler for the Pentium Processor	SPN1-586Z
1069	Sealed Mouse Pad	SMP2000
1075	Ruggedized Solid State Disk Drives. True Read-Write Disk Drive Replacement	IDE05SSI Series
1083	Stand By UPS System	1250RM
1087	NEMA Keyboards	KB5DP/NEMA
1090	SONY Half Height Rewriteable Magneto Optical Disk Drive	SMO-F521
1097	Mitsubishi 14" Diamond Scan Color Monitor	SD4311C
1098	TEAC Dual Disk Drive	FD-505
1099	High Performance Video Adapter	ISAATIAX2
1101	Multiport SVGA Accelerators	MVP-2X, MVP-4X
1108	3.5" High-Performance Removable Cartridge Hard Disk Drives	SQ3270A
1132	Sound BLASTER AWE32	CL202760
1156	IDE and SCSI Disk Drives	QM Series
1157	CD-ROM Internal Drive	CDS535
1169	Conner 500MB Data Cartridge Tape System	7251QI
1170	Multiple Video Cards	MVPNTSC4A
1174	Diagnostic P.O.S.T. Board	RACER II
1180	SVGA NEMA 4/12 Monitor	9403-RV
1182	OEM 9" Color SVGA Monitor	OEM9-VGA3
1186	PCI Bus SVGA Video Adapter 2MB DRAM	NB9D2P
1187	PCI Bus SVGA Video Adapter 4MB DRAM	NB9V4P
1206	20" Diagonal Rack Mount Monitor	9020
1209	Flat Panel Display Controllers	FMC30





DIGITAL I/O

Doc#	Description	Models
1003	16 Channel Isolated Input & 16 Channel Reed Relay Output Interface Boards	16ISO & 16REL
1092	32 Channel Isolated Digital I/O	DIO32B
1125	48 Channel Digital Hardware Interrupt Generator Card	DIO48S/AT-P
1130	32 Switch Reed Relay Card	32REL
1143	Digital I/O Family	PCDIO Family
1144	24 Channel Digital I/O Board	DIO24-P
1145	Isolated Relay I/O Board	DIO8-P
1150	Watchdog Timer Modules	WDT5
1153	Dry Contact Modules	DRY5
1175	Electromechanical Relay Card	RBAC-24
1176	48 Isolated Digital Input Lines	DIO48I/60
1179	5,10, and 20 Channel Counter/Timer Cards	DCC-P



ANALOG I/O

Doc#	Description	Models
1071	1 MHz 12-Bit A/D Board	WIN-30D
1121	Eight Channel Multifunction Card.	AD12-8
1122	16-Bit Resolution Digital to Analog Converter	AOB16/16
1123	Simultaneous Sample & Hold Cards	SSH-08
1154	Low Cost Analog Input Board	ML8-P
1155	Analog Output Card	AOB2-P
1181	Low Cost Multifunction Analog & Digital I/O Card	LC16-125

PC INSTRUMENTATION

Doc#	Description	Models
1018	PC Based 12-Bit A/D & Oscilloscope Card	CS1012
1077	100Msps Digital Oscilloscope Card	CS250
1078	40Msps Digital Oscilloscope Card	CS220L
1135	Full Featured 5 1/2 Digit Digital Multimeter	SM-2020
1164	50Msps Digital Oscilloscope Card	CS225-32K
1165	60Msps Oscilloscope Card	CS6012-512K

REMOTE I/O

Doc#	Description	Models
1047	Computer to Analog Output Modules	D3000/D4000
1048	Remote Input Modules	D1000/D2000
1148	Multifunction Analog & Digital I/O Card for the AI Series 5B Modules	RTI-820
1149	Multifunction Analog & Digital I/O Card for the AI Series 5B Modules	RTI-800/815

MOTION CONTROLLERS

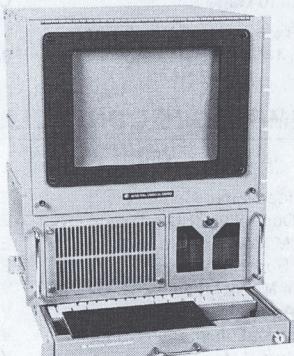
Doc#	Description	Models
1012	Servo Motor Controller	5640-28
1013	Modular Motion System	5640
1014	Stepper Motor Controller	5640-24
1015	24 Line Digital I/O Interface	5640-10
1140	Stepper Motor Controller -3 Axis	5000
1141	Quadrature Encoder Input (1-4 Axis)	5312B-4

COMMUNICATION

Doc#	Description	Models
1019	Four Port RS232	COMM4AT
1045	16 Channel Isolated Relay Sensor I/O Control	DIO16
1139	RS232 to RS422/485 Converter	CON485
1146	PC Based GPS Card	GPS/NAV
1147	PCMCIA GPS Sensor	MOBILE/GPS
1173	Versatile Voice Mail System	BIGMOUTH

SOFTWARE TOOLS & APPLICATIONS SOFTWARE

Doc#	Description	Models
1124	LABTECH Notebook	NOTEBOOKPRO/WIN
1131	Control Software	CONTROL/PRO



Product Highlights



Lattis System 2000 . . . p 6

SYNOPTICS (BAY NETWORKS)

The Lattis System 2000 stackable Ethernet hubs offers not only the high-quality of an industry leader, but at a plug-and-play price. Because these hubs are stackable and upgradable, users can start with a 16-port unmanaged hub and grow the cluster to a 80-port managed hub simply by adding a hub and connecting an expansion cable. Fully compatible with Synoptics System 3000 and 5000 powerful concentrators series, these hubs offer a lower-cost entry into networking. Each hub fits in a single rack-unit, and each cluster counts as a single repeater — for maximum flexibility in a growing environment. Each hub comes with LEDs that indicate power, packet reception, collisions, partition and link status, and can be easily managed alongside other Synoptics products with SNMP and RMON support.



NX-8F p 15

ROCKWELL

Fiber Distributed Data Interface (FDDI) networks provide the most reliable, robust connectivity for today's LAN and Metropolitan Area Network (MAN). With a data rate transfer of a 100Mbps and fiber-optic infrastructure, FDDI is well-suited for medium to large-scale networks. In addition to its high-bandwidth, FDDI is synchronous — which means that each station on the network is given equal and sequential access — making it ideal for bandwidth-intensive environments, such as CAD/CAM and other graphic applications. Recommended in combination with Rockwell's FDDI cards, the 8-port NetExpander FDDI Concentrator is especially well-suited for factory environments which may have a high EMI/RFI field. For troubleshooting and diagnostics, this concentrator offers full SMT support, SNMP (MIB II), and an external RS-232C port for diagnostics.

20-Slot Rack Mount System Chassis



7520-34H p 49

INDUSTRIAL COMPUTER SOURCE

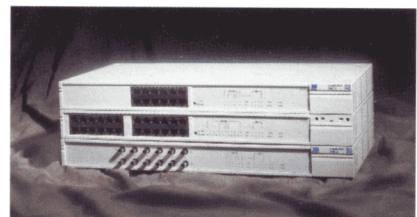
The 7520 series chassis offer up to 20 expansion slots for I/O intensive systems. Passive backplanes may be augmented by redundant, hot swappable power supplies. The system is well cooled by four filtered intake fans for reliability. The backplane may be split for redundant systems. Whether your application calls for numerous multi-port serial, T1, or network interface cards, the 7520 series will hold your application.



DS100I-PAK-1A p 26

DYNATECH COMMUNICATIONS

The DynaStar 100/100I represents a new class of robust internetworking products which integrates the technology required to operate in today's LAN/WAN environment. These compact remote access concentrators, also called "edge" routers (because they often reside on the edge of a branch LAN office), offer more than simple, plug-and-play LAN/WAN connectivity. In addition to use in a branch office LAN, these products also function in wide area networks which are connected to enterprise backbones. The DynaStar product line integrates key features like LAN routing/bridging, remote access (dial-in/out), terminal-to-host communications and more. The DynaStar 100/100I comes in a variety of custom, low-cost configurations, which can include simultaneous support for Frame Relay, ISDN, X.25, leased lines and even ATM (1.544 Mbit/s) — all in a single, easy-to-maintain unit.



LinkBuilder FMS II p 7

3COM

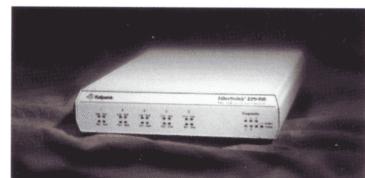
The LinkBuilder FMS II Series is a great choice for users interested in stackable hubs. As part of 3COM's SuperStack strategy, these hubs allow you to connect, segment and grow your network in a cost-effective, yet reliable way. With options for twisted pair (UTP), telco (50-pin) and fiber, these hubs are ideal for mixed-media environments — where "legacy" networks must be connected alongside newer network segments. The Transcend Workgroup Manager is an optional Windows-based package that allows network administrators to easily and effectively manage 3COM's hubs and adapters. The Transcend Workgroup Manager can auto-discover network devices, gather and display network trend information, initiate audible threshold alarms, identify other potential problems and more — all with the click of a button from your PC. In addition, each stackable hub can be upgraded with the optional bridge micro-module to effectively segment a network and increase performance. Other options include the redundant power supply for increased reliability, expansion cables, rack-mount kits and more.

Recommended Print Server



AXIS150 p 30

KALPANA Ethernet Switch



EPS500 p 10



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